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Prologue

THIS is a new venture in English ophthalmic literature, and as it steps out into the world for the first time it is only fair that its nature and purposes should be explained so that it may perhaps find a more ready welcome.

One of the most distressing features of the rapid increase of technical knowledge that characterizes the present century is the enormously swollen literature through which it is purveyed, which week after week, month after month, cascades from the printing presses in all the languages of the world—some of it good, some of it bad, much of it repetitive and a little of it indispensable. To attempt to keep abreast of it even in the relatively restricted field of ophthalmology is a stupendous labour: to succeed would be a full-time task. This journal intends not to add to this excess, but to render it accessible, to allow the ophthalmologist more easily to keep abreast of progress and to assist the researcher by providing him with a ready reference to the contemporaneous work of others who may be adding to our knowledge along the same or parallel lines.

Abstracts properly have two purposes. To the general reader they provide the only possible means of keeping informed of advances in knowledge whereby he can see at a glance what is happening in his subject, how it is evolving and what his colleagues throughout the world are thinking and doing. They form a bridge establishing communication between the clinics of various countries so that the gap between the evolution of new ideas or techniques in one and their trial or adoption in another need not be large or determined by chance. To the specialized reader they provide a reference to original papers on the particular facet of the subject in which he is interested. For him the best abstract cannot replace the original paper, but a good abstract will tell him whether it requires his attention or not. The abstracts in this journal are therefore usually short and written from this point of view. For both classes of reader it is essential that they are comprehensive in their scope and it is the intention that the world's literature be embraced so far as that is possible.

In a relatively narrow specialty such as ophthalmology there is an unfortunate tendency for the subject to become isolated and to suffer from a lack of contacts with general medicine and current thought in wider fields. It is not yet a century since the subject was merely an

appendage of general surgery, and although the immense advances of recent years could not have been achieved without intensive specialized study, there is no doubt that ophthalmology has become the poorer because of its relative isolation. For this reason an attempt will be made in this journal to abstract as fully as possible those papers in general medicine, surgery and pathology which have an ophthalmological bearing although they appear in non-ophthalmological literature. For the same reason reference will be made to the periodical scientific literature dealing with cognate interests in optics, physics, physiology and biochemistry.

In order to make itself more useful and perhaps more interesting, it is proposed, in addition to abstracts, to include periodical reviews dealing with subjects which exhibit a rapidly growing or emergent interest. These, if properly chosen, should be of value in allowing an assessment to be made of the work done in different clinics on problems of current importance.

It would perhaps seem that the task thus set is a formidable one, but fortunately the journal is not stepping out into the world alone. It is sponsored by the *British Journal of Ophthalmology*, an old traveller round the ophthalmic centres of the world. It is working in association with the abstracting service of the British Medical Association with which it reciprocates and makes contacts with general medical literature. It is also linked with the staff of *British Abstracts* so far as scientific literature is concerned. Moreover, it has joined hands with *Ophthalmologica Ibero-Americana* with which it is mutually exchanging abstracts to the advantage of each. And it is hoped that this process of collaboration will increase with other journals of the same nature, so that thereby much labour will be saved and the ideal of comprehensiveness more easily attained.

From the technical point of view *Ophthalmic Literature* will be issued quarterly (or approximately so) or more frequently if the volume of abstracts requires. The literature from January 1st, 1947 will be abstracted, and the volumes will run from June to June; it is hoped in this way that the cumulative annual index which will be issued with each volume will contain the great mass of the literature of the previous year and thus aid reference. Finally, it is hoped that the journal will prove of value to ophthalmologists throughout the world and will play some part in the co-ordination and advancement of our subject.

STEWART DUKE-ELDER.

Review

PENICILLIN IN OPHTHALMOLOGY.

by
SIR STEWART DUKE-ELDER
LONDON

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HISTORICAL.

IN 1928 Alexander Fleming observed accidentally in the Bacteriological Laboratory of St. Mary's Hospital, London, that a certain mould, *Penicillium notatum*, inhibited the growth of staphylococci, and in view of its non-toxicity, suggested that it might be applied as an antiseptic to infected wounds (Fleming, 1929). This was undoubtedly the most revolutionary discovery in therapeutics during

this century. At the time little notice was taken of the suggestion although an unsuccessful attempt was made to isolate the substance (Reid, 1935), until, twelve years later, under the direction of H. W. Florey at the Oxford Department of Pathology, a sufficiently substantial yield of (impure) penicillin was obtained as a brown powder to assess its value (Chain, Florey, Gardner, Heatley, Jennings, Orr-Ewing and Sanders, 1940). Its non-toxicity to animals and its high bacteriostatic power even in great dilution were then established. The first clinical trials undertaken at Oxford, which included cases of acute conjunctivitis and corneal ulcers, showed very promising results (Abraham, Chain, Fletcher, Florey, Gardner, Heatley and Jennings, 1941), and thereafter, under the stimulus of war, extensive research and investigation in Great Britain and America has progressed so rapidly that to a large extent the clinical value of the drug may be said to be established (See Special Number, *Brit. J. Surg.*, 32, 1944 ; *Brit. Med. Bull.*, 2, No. 1, 1944 ; Fleming, *Penicillin, its Practical Application*, London, 1946 ; *Penicillin, its Properties, Uses and Preparations*, Pharmaceutical Press, London, 1946 ; J. L. Hamilton-Paterson, *Penicillin in General Practice*, London, 1946 ; G. E. Beaumont, *Practical Points in Penicillin Treatment*, London, 1946.)

PHARMACOLOGY

Preparation.—The difficulties met with in the preparation in bulk of penicillin are very great, 1 gm. only of the dry substance being originally obtained from 100 litres of culture medium. The result was a yellow powder containing 80 to 90 per cent. impurities. More recently commercial samples containing 80 per cent. penicillin have come on the market and towards the end of 1946 pure penicillin as a calcium or sodium salt has become available as a white crystalline substance : one mgm. corresponds to 1,660 Oxford units. It is freely soluble and in the dry pure form remains stable at room temperature for many months ; aqueous solutions remain active for 14 days under sterile conditions and when kept on ice up to four weeks. It has recently become obvious that many of the toxic reactions occurring with commercial penicillin are due in fact to impurities and are absent when the pure salt is employed.

Synthetic penicillin has been made at Oxford, by the Merck organization in New Jersey, and at Cornell University Medical College, New York. In all cases the yield is only about 0.1 per cent. and the synthesis has been chemically uninformative (Vigneaud, Carpenter, Holley, Livermore and Rachele, 1946).

The bactericidal action of penicillin is extremely powerful, inhibiting the growth of staphylococcus aureus in dilutions of between 1 in 24,000,000 and 1 in 30,000,000. The Oxford unit is the amount

of penicillin which, when dissolved in 50 c.c. broth, is just capable of inhibiting a test growth of sensitive staph. aureus.

Mode of action.—It was originally thought that penicillin was bacteriostatic and not bactericidal, interrupting cell division without killing the bacteria; the object of continuous administration was therefore to keep the organisms inhibited until they were overcome by the resistance of the body. It has now been shown that penicillin has a deleterious effect on actively growing as well as dividing bacteria and is without effect on resting bacteria. How it exerts this effect is at present unknown. There is evidence that it may prevent oxygen uptake (Hobby, Meyer and Chaffec, 1942; Bigger, 1944*b*; Garrod, 1945; Chain and Duthie, 1945). On the other hand Schwartzman (1946) thought that the activity of penicillin was bound up with the effect of certain amino-acids upon bacterial metabolism. However that may be, its action is unimpaired clinically by the presence of serum, blood or pus (Florey and Jennings, 1944), a factor of the utmost practical importance making the drug invaluable as a local application.

Effect of Other Substances.—The effect of penicillin is lost in acid solutions even as weak as pH 5 to 7 (Garrod, 1945). In ocular therapeutics, therefore, boric acid and adrenalin hydrochloride should be avoided (Bigger, 1944*a*; Cameron, 1945). Atropine, eserine, cocaine, argyrol and fluorescein show no incompatibility (Rycroft, 1945*a*; Cameron, 1945; Juler and Young, 1945).

Sensitive and Resistant Bacteria.—In general, all gram-positive organisms and gram-negative cocci are sensitive to penicillin, while gram-negative bacilli are resistant: most viruses are relatively insensitive. Resistant strains (e.g. of staphylococci and streptococci) are, however, encountered (see Bentley and Thompson, 1945).

The literature shows that the following organisms of ophthalmic interest are sensitive to penicillin—*gonococcus*, *meningococcus*, *staphylococcus*, *streptococcus*, *pneumococcus*, *Cl. welchii*, *Cl. oedematiens*, *Cl. septicus*, *B. anthracis*, *C. diphtheriae*, *Trep. pallidum*, *Trep. recurrentis*, *Lept. icterohæmorrhagiae*.

Virus of trachoma, *inclusion blenorrhæa*, *lymphogranuloma venereum* (see Tooke, 1945, and others).

Methods of Administration.

A. Systemic Administration.

1. **INTRAMUSCULAR INJECTION.**—(a) The commonest method of systemic administration is by *intermittent intramuscular injections*. The common dose is 100,000 to 120,000 units a day for 3–5 days. Injections are usually given 3-hourly, a dose of 15,000 units being dissolved in 2 c.c. of pyrogen-free normal saline or distilled water. Impurities may cause a transient pain at the site of injection.

(b) *Continuous intramuscular infusion* has the disadvantages that constant supervision is required and strict asepsis is sometimes difficult (Morgan, Christie and Roxburgh, 1944).

(c) *Intramuscular injection in oil* is probably the easiest method, continuous slow absorption being obtained. Romansky and Rittman (1944) first used suspensions of penicillin in beeswax and peanut oil.

2. INTRAVENOUS ADMINISTRATION.—Intravenous administration of penicillin has been disappointing owing to rapid elimination. Excretion in the urine begins as soon as the penicillin reaches the blood stream so that there is no advantage gained by this method.

3. ORAL ADMINISTRATION.—Early observations indicating that penicillin was destroyed by acids (Abraham, Chain, Fletcher, Florey, Gardner, Heatley and Jennings, 1941) and the later discovery of the production of penicillinase by coliform organisms seemed to provide theoretical confirmation of the fact that penicillin was not effective when taken by mouth (Chain and Florey, 1944). The disadvantages of systemic injection have recently stimulated attempts to overcome these difficulties. Meyer, Hobby and Dawson (1943) found that esters of penicillin, themselves inactive, were apparently hydrolysed slowly with the liberation of penicillin and were effective in animals by oral administration. Capsules coated with a resin-cellulose plastic were employed by Cutting, Halpern, Sultan, Armstrong and Collins (1945) and with hardened gelatin by Burke, Ross and Strauss (1945). McDermott, Bunn, Benoit, Dubois and Haynes (1945) combined penicillin with peanut oil as a protection against acid, and Bunn, McDermott, Hadley and Carter (1945) used oil and beeswax. The use of sodium citrate as a buffer has been more widely employed with promising results (György, Vandegrift, Elias, Colio, Barry and Pilcher, 1945; Charney, Alburn and Bernhart, 1945; Bushby and Harkness, 1946); and it would appear that aluminium hydroxide may have a slight adjuvant effect (Finland, Meads and Ory, 1945). This method of administration will doubtless receive further attention because of its ease. Bushby and Harkness (1946) obtained results comparable with those gained with systemic administration in 62 cases of gonorrhœa treated with 6 doses of penicillin each of 40,000 units, along with 1 gm. sodium citrate given by mouth within 15 hours; and Leinfelder and Paul (1946) obtained satisfactory results from the oral administration of penicillin in combination with aluminium dihydroxy-aminoacetate comparable to those of local treatment in hordeola, conjunctivitis, blepharo-conjunctivitis, but not in acute and chronic uveitis. It is important from the ophthalmological point of view that Toohey (1946) found that new-born babies maintained an adequate therapeutic concentration in the blood with 10,000 units 3-hourly in the feeds.

B. Local Administration.

The ready excretion of penicillin makes local administration the method of choice. This is particularly so in external diseases of the eye but more difficult in internal diseases because of the difficulty in getting sufficient concentrations of the drug to pass the blood-aqueous barrier.

1. EXTERNAL APPLICATION.

(a) *Solutions*.—When impure penicillin is employed solutions used as drops in isotonic saline in a concentration of 20,000 units per c.c. appear to produce no irritation in animals (Struble and Bellows, 1944). In man, drops of a concentration of 5,000 units per c.c. may be well tolerated and are almost always so in dilutions of 1,000 units per c.c. Pure penicillin in concentrations up to 100,000 units is similarly tolerated. In such concentrations the solution should be made up with water to avoid hypertonicity (Ungar and Denston, 1946). It is noteworthy that solutions of 500 units per c.c. of (impure) penicillin do not retard mitosis of the corneal epithelium after abrasions or burns in experimental animals (Smelser and Ozanics, 1944).

(b) *Lamellæ* with a base of gelatin or lactose are more uncomfortable and have no advantage over drops (Necly and Cross, 1945).

(c) *Ointments*.—Several bases have been employed but most of them are unsatisfactory since they tend to become inactivated by acidity or otherwise, or tend to cause local irritation (Parry, Laszlo and Penistan, 1945; v. Sallmann, Grosso and Marsh, 1946). A number of bases have been employed: pure vaseline (Florey and Florey, 1943); a lanette wax base (Cashell, 1944) as recommended by the Ministry of Supply (1945) (a mixture of sulphuric acid esters of cetyl and stearyl alcohols along with free alcohols); carbowax (Leopold and LaMotte, 1945); eucerin L.M. (a blend of wood alcohols and paraffin hydrocarbons) (Minton, 1946); wool fat and cold cream (Keyes, 1944); anhydrous wool fat, liquid paraffin and an oil-and-water emulsion (v. Sallmann and Meyer, 1944). The official B.P. preparation is:

Penicillin (calcium salt)	100,000 units
Soft yellow paraffin	90 g.
Wool fat	10 g.

v. Sallmann, Grosso and Marsh (1946), assessing the value of nine types of base, found that the requirements of non-irritability, stability and ready penetration were most adequately met either by a base of hydrous vegetable oils (hydrogenated peanut, soya bean and cottonseed oils) using the sodium salt of penicillin, or by an anhydrous base of petrolatum with the non-saponifiable residue of wool fat (sterols and sterol esters) using the calcium salt of

penicillin. As a general rule, for superficial infections efficient ointments have the advantage over drops that their efficacy lasts longer (Crawford and King, 1944), but they have usually been found to be more irritating; when pure penicillin, however, is employed, concentrations up to 100,000 units per gm. are tolerated even by infants. (Sorsby and Ungar, 1946).

(d) *Powders* may be employed wherein calcium penicillin is diluted with one of the sulphonamides (sulphathiazole) in a concentration of 1,000 to 5,000 units per gm.

(e) *Crystalline penicillin* has been used in the treatment of corneal ulcers (Juler and Young, 1945; Juler and Johnson, 1946; Ainslie, 1946).

2. INTRA-OCULAR PENETRATION.

(a) *Systemic administration*.—Owing to the difficulty of passing the blood aqueous-barrier, very large doses indeed of penicillin require to be given by systemic administration if an adequate concentration within the eye is to be attained. When given in ordinary or large doses (up to 4,000 units per kilo. body weight) penicillin does not reach the aqueous or vitreous in therapeutic concentrations (v. Sallmann and Meyer, 1944; Leopold, 1945; Leopold and LaMotte, 1945). Struble and Bellows (1944) found that a concentration of 1 unit of penicillin per ml. of aqueous can be obtained if 12,800 units per kilo. body weight are injected intravenously in the dog. This conclusion has been confirmed in rabbits in which animal therapeutic concentrations of penicillin in the aqueous may be attained for some hours after similarly massive doses (Town and Hunt, 1946; Town, Frisbee and Wisda, 1946; Sorsby and Ungar, 1946); the last authors showed that after an injection of 25,000 or 50,000 units intramuscularly or intravenously in rabbits, therapeutic levels are reached and maintained for some 3 hours in all the tissues of the globe except the lens. These doses are of course massive, of the order of 40 or 50 times that of the usual clinical dose in man. These results have been repeated in man. Ordinary doses do not penetrate into the eye (Wright and Stuart-Harris, 1945) and Rycroft (1945a) found no trace or only slight evidence of bacteriostasis after doses up to 30,000 units injected intramuscularly. It is clear that to obtain therapeutic doses intra-ocularly by this means requires very large doses and that these must be frequently repeated.

TEARS.—After ordinary clinical doses administered systemically, no penicillin is found in the tears (Rammelkamf and Keefer, 1943), but after massive doses it is present (12,800 units per kilo body weight in the dog) (Struble and Bellows, 1944).

(b) *The application of drops* into the conjunctival sac of animals leads to no penetration into the aqueous (v. Sallmann and Meyer, 1944; Leopold and LaMotte, 1945) unless the cornea is abraded

when ready penetration occurs (Leopold and LaMotte, 1945, found 1.5, 1.5 and 0.6 units per c.c. 15, 45 and 105 mins: after the instillation of drops of 500 units per c.c. in rabbits).

(c) *Constant corneal baths* in animals allow penetration of penicillin through the cornea in therapeutic concentrations: traces are found in the vitreous but none in the lens (v. Sallmann and Meyer, 1944; Struble and Bellows, 1944; Wright and Stuart-Harris, 1945). Duncan (1945) and Struble and Bellows (1946) described suitable baths for clinical use.

(d) *Packs of cotton-wool* soaked in concentrated solutions of penicillin (up to 20,000 units per c.c.) in the conjunctival fornix were found by v. Sallmann (1945) to be a very effective method of introducing the drug into the aqueous.

(e) *Ointments*.—v. Sallmann and Meyer (1944) and Leopold and LaMotte (1945) found no penetration into the eye when penicillin was applied as an ointment: the former authors reported no advantage from the use of wetting agents. Bellows (1944) found considerable penetration when the base was of "vanishing" type stearate, but the corneal epithelium was damaged thereby. L. v. Sallmann, Grosso and Marsh (1946) found that the best vehicles so far as ocular penetration (in rabbits) was concerned was either the hydrous vegetable oil base or the anhydrous wool-fat petroleum base already mentioned. Using very high concentrations of pure penicillin, however (up to 50,000 and 100,000 units per gm.) with a base of petroleum jelly and liquid paraffin, Sorsby and Ungar (1946) demonstrated a penetration in therapeutic levels in rabbits: when pure penicillin is employed, ointments of such concentration are well tolerated in man.

(f) *Iontophoresis* has been used by several authors as a means of introducing penicillin into the eye. In rabbits there is considerable penetration (v. Sallmann and Meyer, 1944; v. Sallmann and Di Grandi, 1944; Dunnington and v. Sallmann, 1944; Wright and Stuart-Harris, 1945). Such a method, however, may cause trauma to the cornea and is doubtfully valid (Hamilton-Paterson, 1946).

(g) *Subconjunctival injections* provide the most effective and useful method of introducing penicillin into the eye. Considerably high intra-ocular concentrations were obtained in animals by Bellows (1944), Struble and Bellows (1944) and Leopold (1945), and in man by Rycroft (1945b) using 4,000 units of impure penicillin. Using pure penicillin, however, in large doses, Sorsby and Ungar (1946) found that injections of 25,000 units in 0.5 ml. water created no reaction in rabbits and produced concentrations of penicillin above therapeutic levels in all the ocular tissues except the lens for very considerable periods. With the addition of adrenalin to the injection the aqueous at 5 and again at 25 hours after the injection

contained more than 2 units and the vitreous 0.1 and 0.25 units respectively.

(h) *Intra-aqueous injection*.—The injection of impure penicillin into the aqueous produces a slight and sometimes considerable iritis with the formation of jelly-like coagulates (Dunnington and v. Sallmann, 1944 ; Leopold, 1945). Ida Mann (1946) performed a series of carefully controlled experiments on rabbits, injecting doses between 200 and 1,500 units. After the injection the eyes showed considerable reaction, and in most cases a transparent gelatinous coagulum or a flocculent deposit appeared on the surface of the iris: sometimes this reaction was localized but occasionally it involved the whole surface of the iris. Usually in uncomplicated cases the coagulum began to shrink in about an hour, and in four hours it had practically disappeared although the eyes looked red and irritable 18 hours after the injection. In practically every case the eye was normal in three days. It would thus seem that the result of the injection of commercially impure penicillin into the anterior chamber is to produce a reactive aseptic anterior uveitis of varying severity. This reaction varies with the amount of impurities in the penicillin but the reaction when the drug is 100 per cent. pure is as yet unexplored, although the effects of injection into the vitreous (*vide infra*) would lead us to suspect that no harm would arise. Bacteriological assays show that a strong bacteriostatic reaction can be expected for at least six hours after the injection, but persistence for much longer is unusual. From these experiments it would appear that the injection of penicillin into the anterior chamber would be a method of considerable value in an infection of the anterior segment of the eye, but that precautions should be taken that *only the purest form of penicillin should be employed*, that the injections should not be repeated frequently and at not more than six-hourly intervals. Certainly in acutely infected eyes any deleterious reaction is negligible even if the drug is not 100 per cent. pure (Alpert, 1945 ; La Rocca, 1945 ; and others).

(i) *Intravitreal injections*.—After the injection of penicillin into the vitreous bacteriostatic levels are maintained in animals for 36 hours (v. Sallmann, Meyer and di Grandi, 1944). Rycroft (1945a) found a high concentration in man after 2 days. Impure penicillin, however, is badly borne in the experimental animal. The immediate effect of the injection of saline into the vitreous of a rabbit is the formation of a localized opacity which persists for two days ; thereafter it becomes less dense and spreads, leaving a slight cloud which may persist for over a year. After the injection of 1,000 units of impure penicillin in saline, Mann (1946) found an intensive reaction involving a severe exudative choroiditis and occasionally the formation of cataract and the development of optic

atrophy. Pathologically a complete neuroretinal degeneration may be produced, followed by fibrosis and accompanied by thickening and fibrosis of the choroid. If relatively pure sodium penicillinat is employed, however, the reaction is much less severe although some retinal hæmorrhages may appear. This conclusion was substantiated by v. Sallmann, Meyer and di Grandi (1944) and v. Sallmann (1945) and Roenne (1946a) who found that in doses of 100-500 units the injection of penicillin into the vitreous body of animals is practically harmless. It has been confirmed by Sorsby and Ungar (1946) who used the pure drug and found the reaction undetectable in rabbits. From these experimental results it would therefore appear that *only the purest samples of penicillin should be used for injection into the vitreous and that it should only be employed when the state of the eye warrants the adoption of drastic measures.* In this assessment, of course, two factors must be remembered—first, that intravitreal infection almost invariably leads to blindness if not to actual loss of the eye, and second, that as the preparations of penicillin which become available get more pure, the disadvantages of the employment of the drug in this way will progressively diminish.

These toxic reactions on the intra-ocular tissues with the use of the preparations of penicillin hitherto in common use are somewhat comparable to the irritation which may be produced on intrathecal injection whereby a reaction varying from headache to convulsions may result (see Rosenberg and Arling, 1944; Neymann, Heilbrunn and Youmans, 1945; Simon, 1945; Walker and Johnson, 1945a, b; Walker, Johnson and Kallros, 1945).

SENSITIZATION.—Reports on allergic reactions to penicillin are increasing in number. In a small number of cases the local application of penicillin gives rise to sensitization in the form of a contact eczematous dermatitis (Barker, 1945; Sanders, 1945; Michie and Bailie, 1945; Brown, 1946; Thygeson, 1946). Severe ocular dermatitis has resulted from local application to the eye (Keyes, 1944; Selinger, 1945; Schultz, 1946). To a large extent the reaction may be due to impurities or the vehicle and not to the penicillin itself. Pyle and Rattner (1944), however, reported a contact dermatitis with a positive reaction to the patch test in which it seemed that the (impure) penicillin, not the medium, produced the allergic reaction, and evidence is accumulating that the offending agent may be the active principle of the drug (Suchecky, 1946). General allergic reactions have occasionally followed the systemic use of (impure) penicillin; they may take the form of hydrarthrosis, urticaria with œdema of the eyelids, a serum-sickness-like reaction of an anaphylactic type (Keefer, Blake, Marshall, Lockwood and Wood, 1943; Lyons, 1943; Herrell, Nichols and Heilman, 1944; Kolodny and Denhoff, 1946; Gordon, 1946, with a review of the literature; Suckecky, 1946, with a review of the literature), or a

therapeutic shock of the type of a Jarisch-Herxheimer reaction (Mahoney, Arnold and Harris, 1943; Bauer and Egolf, 1945; Morginson, 1946, with a review of the literature). The aetiology, however, is still debatable, some believing that some of these reactions are due to impurities, others incriminating the active principle of the drug. Anti-allergic and anti-histamine agents (adrenalin, benadryl) may control the allergic type of reaction (Willcox, 1946).

TO SUMMARIZE THOSE METHODS OF ADMINISTRATION it may be stated that adequate levels of penicillin can be attained in the orbital and lid tissues by systemic injections; therapeutic concentrations can be attained in the conjunctiva and corneal surface most easily with drops and maintained by suitable ointments. With impure penicillin, however, intra-ocular penetration is difficult since the extra-ocular tissues will not easily tolerate concentrations sufficient to enter the globe in adequate quantity, and the intra-ocular tissues will not readily tolerate the direct introduction of the drug into the eye itself. With pure preparations, however, the evidence available suggests that neither of these disadvantages apply. Repeated subconjunctival injections in sufficient concentration allows of intra-ocular penetration in therapeutic amounts and seems to be the clinical method of choice.

EXPERIMENTAL INFECTIONS.

A considerable literature has accumulated on the treatment of experimental infections in animals by penicillin.

1. CORNEAL INFECTIONS.

The following papers deal with the results obtained by local penicillin treatment of corneal infections: in practically every case the results were good.

Staphylococcus aureus: Robson and Scott (1942-3a, b) (rabbits).

Pneumococcus: Robson and Scott (1943) (rabbits).

Friedländer Bac.: Leopold, Holmes and La Motte (1945) (rabbits).

The local use of penicillin solution reduces the conjunctival reaction and delays the onset of corneal vascularization after chemical traumatization of the cornea with vesicants such as mustard gas; pathologically, the inflammatory infiltration and oedema are less than in controls (Leopold and LaMotte, 1947). The effect is due to the prevention of infection.

2. ANTERIOR CHAMBER INFECTIONS.

Staphylococcus: v. Sallmann (1944a) (rabbits)—15 recoveries in 24 infections treated by iontophoresis.

Sorsby (1946) (rabbits)—subconjunctival injections of 20,000 units pure penicillin twice daily for 3 days—good results. Ointment

(25,000 to 100,000 units per gm. three times a day for 3 days)—good results.

Intramuscular injections (50,000 units twice daily for two days)—infection controlled.

Pneumococcus : v. Sallmann (1943) (rabbits)—all recovered unless treatment was delayed 12 hours, at which time 9 out of 12 recovered (corneal baths and iontophoresis).

Streptococcus : Sorsby (1946) (rabbits)—iritic reaction but eye retained after subconjunctival injections (25,000 units pure penicillin twice daily for two days). Systemic injections (50,000 units twice daily for 2 days)—marked reaction and panophthalmitis.

Town, Frisbee and Wisda (1946) (rabbits)—a virulent streptococcal infection introduced into the anterior chamber could be controlled by massive intramuscular doses of penicillin.

3. INTRALENTICULAR INFECTIONS.

Staphylococcus : Dunnington and v. Sallmann (1944)—no benefit by iontophoresis ; cure by intralenticular injection if treated within 6 hours ; cured in 2 out of 10 if within 24 hours.

Cl. welchii : v. Sallmann (1944a) (rabbits)—no recoveries by iontophoresis.

4. VITREOUS INFECTIONS.

Staphylococcus : v. Sallmann, Meyer and di Grandi (1944) (rabbits)—no effect by iontophoresis. Control of infection by intravitreal injection if within 12 hours ; all eyes lost if treatment delayed for 24 hours. Slight deleterious intra-ocular reaction varying with the impurity of the penicillin.

Leopold (1945) (rabbits)—no effect from systemic or subconjunctival (2,500 units) injection. Injection into the anterior chamber (500 units), 4 out of 6 eyes lost. Intravitreal injection : the eye retained without showing much reaction if more than 1,000 units injected.

Sorsby (1946) (rabbits)—ointment of 25,000 to 100,000 units pure penicillin per gm.—eye retained but vitreous disorganized. Subconjunctival injections of 20,000 units twice daily for 3 days—cure with little reaction. Systemic injection of 40,000 units twice daily in beeswax—eyes retained but vitreous disorganized.

CLINICAL APPLICATIONS

A. Extra-Ocular Infections.

CONJUNCTIVITIS.

In the treatment of conjunctivitis penicillin is usually used as drops or ointment. The drops are usually given in a strength of from 500–2,000 units per c.c. and the ointment up to a strength of 1,000

units per gm. of the relatively impure drug. There would seem to be little value in higher concentrations than these, and since they are usually well tolerated impure commercial penicillin is adequate. With the use of drops penicillin is not usually recoverable from the conjunctival sac after 3 hours: instillations should therefore be at 3- to 4-hourly intervals. Ointment persists in the conjunctival sac for a longer period and is therefore more practicable for application at night. Fortunately most organisms causing conjunctivitis are penicillin-sensitive: this, of course, is a necessary condition of treatment. In general terms, *in the presence of such organisms*, as a local therapeutic measure for superficial infections of the lids, conjunctiva, or cornea, penicillin is by far the best therapeutic agent known. From the bacteriological point of view it eradicates sensitive organisms from the conjunctiva in a few days. It cannot, however, prevent re-infection after the cessation of treatment, and there is no reason to believe that effective therapy establishes any immunity to recurrent infections: the organisms causing the recurrences, however, appear to be as sensitive to penicillin as those causing the original infection. The usual story, therefore, is that of a rapid clinical cure in a few days in acute infections; in chronic infections there is again often a rapid apparent cure with a sterile swab, but recurrences may appear which, however, themselves are amenable to similar benefit. If there is no pathogenic positive swab the effect is nil.

The literature for the more ordinary types of conjunctivitis (staphylococcal, pneumococcal, etc.) is now considerable and the results bear out the above summary of conclusions: Abraham, Chain, Fletcher, Florey, Gardner, Heatley and Jennings (1941); Florey and Florey (1943); Cashell (1943-4); Ackerman (1944); Bellows (1944); Crawford and King (1944); Griffey (1944); Miller (1944); Milner (1944); Barrenechea and Contardo (1945); Barrett (1945); Bietti and Scalfi (1945); Dubois-Poulson (1945a, b); McCulloch and Dyson (1945); Mietus (1945); Pavia and Laehman (1945); Sorsby and Hoffa (1945); Town (1945); Jones (1946); Lewis (1946); Mayer (1946); Sorsby (1946a); Vorisek (1947).

With relatively insensitive organisms such as a Morax-Axenfeld bacillus, the bacillus of Petit, the Koch-Weeks' bacillus and the B proteus and some diphtheroids, relatively good results are obtained if sufficient concentration is used over a sufficiently long time (Crawford and King, 1944; Cashell, 1944; Bietti, 1944; Sorsby and Hoffa, 1945; Brown, 1946). Relapses, however, tend to be more common.

With systemic treatment Griffey (1944) and Bland and Wilson (1945) reported a dramatic effect on gonococcal ophthalmia

(relapses occur after a single dose), but the latter found no effect on the acute Koch-Weeks' ophthalmia of Egypt; and Leinfelder and Paul (1946) claimed good results in catarrhal conjunctivitis and acute and chronic blepharo-conjunctivitis by the oral administration of the drug (*vide supra*).

OPHTHALMIA NEONATORUM forms a special case, for in no type of conjunctivitis is the value of penicillin more apparent than in a gonococcal infection, both that occurring in adults or in the new-born. The introduction of penicillin, indeed, has robbed this disease of most of its terrors and if a case comes under treatment at a reasonably early stage it can be cured in as many hours as it takes days by sulphonamides or as it took weeks with the classical method of treatment by silver and repeated irrigations. It is interesting and important that practically all the organisms which may be responsible for ophthalmia neonatorum—not only the gonococcus but also the staphylococcus, the streptococcus and even the virus causing purulent blennorrhoea of the new-born—are equally sensitive to the action of the drug. The following outline of treatment may be accepted as a standard method in these cases, and, with suitable modifications, may be employed for any case of acute purulent conjunctivitis due to a penicillin-sensitive organism (Sorsby, 1946b).

A swab of pus is taken for bacteriological examination. The eye is then irrigated with normal saline at room temperature to wash away pus. A nurse seated on a chair takes the baby on her lap, and another nurse is responsible for putting into the eye two drops of penicillin, 2,500 units per c.c. every minute. Pus does not re-form in any quantity while this treatment is in progress, and any secretion can readily be wiped off with pledgets of cotton-wool. Within 20 to 30 minutes the clinical picture has changed. Although the lids are still swollen and the conjunctiva still remains moist there is now no tangible secretion. After 30 minutes of this treatment the baby is returned to the mother.

At the end
and subse-
rule normal.

The principal papers in the literature are:—Florey and Florey (1943), Sorsby (1943-5b, c-6a, b, c, d), Berens (1944), Lemoine and Lemoine (1944), Sievers, Knott and Soloway (1944), Bietti (1944), Sorsby and Hoffa (1945), Vorisek and Evans (1945), Bernasconi (1945), Kapur (1946) and Vejdovsky (1946).

Sievers, Knott and Soloway (1944) reported good results with intramuscular injections repeated 3-hourly giving doses of 10,000 units up to a total varying from 60,000 to 330,000 units.

TRACHOMA.—The reports with regard to trachoma vary. Keyes (1944), Dubois-Poulsen (1945b), Brown (1946), and Lavery (1946) reported no good unequivocal results. On the other hand, im-

provement and sometimes cure were reported by Milner (1944), Bellows (1944), Gifford (1945) and Bietti (1945). Promising results were recorded by Sorsby (1945*c*), Gifford (1945) and Darius (1945). Further trials, however, must be awaited before any definite opinion can be given.

BLEPHARITIS.

As would be expected blepharitis, both squamous and ulcerative, responds well to penicillin provided a local infection by penicillin-sensitive organisms is present and provided, in chronic cases, the treatment is maintained for some time after a clinical cure seems to have been assured, since relapses are otherwise prone to follow (Florey and Florey, 1943 ; Cashell, 1943 ; Crawford and King, 1944 ; Milner, 1944 ; Arruga, 1944 ; Keyes, 1944 ; Sorsby, 1945*c* ; Barrenchea and Contardo, 1945 ; Pavia and Lachman, 1945 ; Florey, McFarlan and Mann, 1945 ; Brown, 1946 ; Fraser and Scott, 1946 ; Stein, 1946 ; Thygeson, 1946). If, however, the blepharitic condition is due to toxins (such as the exotoxins of a nasal staphylococcal infection) or has a basis of seborrhœa, penicillin, as would be expected, is of little value (Bellows, 1944 ; Brown, 1946 ; Thygeson, 1946). Chronic meibomitis also inhibits the response (Thygeson, 1946). There is thus a definite place for penicillin in the treatment of blepharitis, but indiscriminate use will result in as many failures as cures.

STYES, particularly when they are recurrent, are usefully treated by drops or ointment, assisted if necessary by general treatment (Milner, 1944 ; Pavia and Lachman, 1945 ; Parry, Laszlo and Penistan, 1945 ; de Roeth, 1946 ; Mayer, 1946).

CORNEAL DISEASES.

SIMPLE CORNEAL ULCERS of organismal origin react well to penicillin, including ulcers due to staphylococci, pneumococci, the bacillus of Petit, diphtheroids, the Morax-Axenfeld bacillus, bacillus pyocyaneus, etc. (Abraham, Chain, Fletcher, Florey, Gardner, Heatley and Jennings, 1941 ; Cashell, 1944 ; Keyes, 1944 ; Barrenchea and Contardo, 1945 ; Pavia and Lachman, 1945 ; Dubois-Poulsen, 1945*b*, Jones, 1946).

RECURRENT MARGINAL ULCERS, generally associated with acute conjunctivitis, usually respond (Florey and Florey, 1943 ; Crawford and King, 1944 ; Bellows, 1944 ; Arruga, 1944 ; Dunnington and v. Sallmann, 1944*a* ; Mietus, 1945 ; Parry, Laszlo and Penistan, 1945) but at other times do not (Milner, 1944).

Epidemic keratoconjunctivitis was found to be cured by Jacobson and Levin (1945).

HYPOPYON ULCERS, if adequately treated, respond well in many cases with repeated applications of drops (Florey and Florey, 1943 ; Arruga, 1944 ; Parry, Laszlo and Penistan, 1945 ; Summers, 1946 ; Rintelen, 1946) but better by subconjunctival injections (La Rocca, 1945—with the addition of the injection of 50 units into the anterior chamber ; Vajdovski, 1946), or by the application of solid crystals of the salt (Juler and Young, 1945 ; Julier and Johnson, 1946). Dunnington and v. Sallmann (1944) used iontophoresis. Sorsby and Ungar (1946) used with success pure penicillin drops suspended in castor oil (10,000 units per ml.) as well as concentrated ointments and subconjunctival injections. La Rocca (1945) injected 50 units of penicillin into the anterior chamber and 100 units subconjunctivally: the hypopyon disappeared next day. Rycroft (1945a) found the result of such treatment in war wounds unsatisfactory.

Alpert (1945) obtained resolution of a **RING ABSCESS OF THE CORNEA** after the intra-ocular injection of penicillin (250 units per c.c.) into the anterior chamber (plus oral sulphadiazine).

No or little beneficial effect has been reported, as would be expected, in **DENDRITIC ULCER** (Milner, 1944 ; Keyes, 1944) or in disciform keratitis (Milner, 1944).

Equivocal but sometimes promising results have been reported in **INTERSTITIAL KERATITIS** (Atkinson, 1945 ; Sorsby, 1945c ; Sorsby and Ungar, 1946), particularly by subconjunctival injections. Kushy (1947) reported a remarkably rapid improvement by treatment with cotton wool packs soaked in 20,000 units per c.c., inserted into the fornix ; but the possibilities of the ocular treatment of syphilis has as yet hardly been explored (Grecves, 1945).

INFECTED SOCKETS have not received much attention in the literature. Milner (1944) found penicillin disappointing. Florey and Florey (1943) found it more satisfactory. In the war it was used extensively with good results as a sulphathiazole-penicillin powder.

DACRYOCYSTITIS has been treated by the instillation of drops into the conjunctival sac (Arruga, 1944-5 ; Pavia and Lachman, 1945 ; Jones, 1946), by irrigation of the sac (Florey and Florey, 1943 ; Vorisek, 1947) and by direct injection into the sac (Milner, 1944 ; Parry, Laszlo and Penistan, 1945). The results have been variable. Turtz (1946) obtained a good response by the instillation of penicillin into the punctum without any attempt at irrigation.

GRANULATING WOUNDS have been satisfactorily reported on by Bodenham (1943), and **BURNS** of the lids by Milner (1944).

ORBITAL CELLULITIS responds well if sensitive organisms are

involved (Florey and Florey, 1943 ; Sloane, 1944 ; Keyes, 1944-45 ; Putney, 1945 ; Vorisek, 1945 ; Barrenechea and Contardo, 1945 ; Bentley, 1945 ; Town, Frisbee and Wisda, 1946 ; Vancea, Ianou and Metianu, 1946).

The results in cases of LATERAL and CAVERNOUS SINUS THROMBOSIS are often prompt and may be spectacular after intravenous treatment (combined with heparin) (Goodhill, 1944 ; Johnstone, 1945 ; Bentley, 1945 ; Putney, 1945 ; Kramer, 1945). Kravitz (1945) obtained a good result by administering penicillin intravenously and into the orbit through drainage tubes, and Banks-Smith (1945) by systemic intramuscular injections. Barker (1943) cured a case of Gradenigo's syndrome complicated by pneumococcic meningitis with penicillin used systemically with sulphadiazine.

B. Intra-ocular infections.

1. EXOGENOUS INFECTIONS.

EXOGENOUS INTRA-OCULAR INFECTIONS FROM PENETRATING INJURIES have on several occasions been controlled by penicillin when it would seem that otherwise the eye would have been lost. Too often, however, the retained eye has been left with little or no vision, an indication of the susceptibility of the ocular tissues to destructive inflammatory processes.

The varied effects of *systemic treatment* have been reported on by Sanders (1945), Rycroft (1945a) and Rollet (1946): most cases retained the eye. *Subconjunctival injections* have been of value (Vejdovsky, 1946 ; Sorsby and Ungar, 1946). Systemic injections undoubtedly form a useful adjunct to local administration (Scobee, 1945 ; Sorsby and Ungar, 1946). Capus (1946) found that prophylactic systemic administration of penicillin did not prevent a *Cl. welchii* panophthalmitis after a penetrating injury.

The *injection of penicillin solution into the anterior chamber* has resulted in the retention of several suppurating eyes—Cashell (1944), Mietus (1945), Parry, Laszlo and Penistan (1945), Dubois-Poulsen, (1945b), Ingalls (1946) and others. The largest series of this type of case has been reported by Mann (1946) who treated 29 eyes, 28 of which were perforating injuries, by the intra-ocular injection of (impure) penicillin. She injected 0.25 c.c. of a solution containing doses varying from 1,000 units to 50,000 by means of a lacrimal cannula through an incision previously made by a broad needle. The actual strength used did not appear to matter much but, on the whole, the best results were obtained by the weaker solutions. All these 29 cases had severely injured or highly infected eyes and judging by ordinary clinical standards would have been lost. As a result of the treatment 12 eyes had to be excised without any improvement in their condition ; 9 healed and remained quiet and

painless, but blind. In 3 of these latter the penicillin was injected into the vitreous which became opaque and did not clear. Of the remainder one healed with the formation of a cataract and 3 regained poor vision, while in only 2 did normal vision result.

The injection into the vitreous of penicillin in perforating wounds has led to little or no good result in some cases (Rycroft, 1945a; Roenne, 1946b), and to good results in others (Traquair, 1945).

SUPPURATING ENDOPHTHALMITIS FOLLOWING OPERATIONS has on several occasions been treated by penicillin. After cataract operations, Green and Jakobovits (1945) and Law (1946) used intramuscular injections with good effect and Sorsby and Ungar (1946) obtained dramatic results with massive subconjunctival injections of the pure drug. Using iontophoresis, Dunnington and v. Sallmann (1944b) also preserved an eye which otherwise seemed destined to be lost. Cashell (1944) obtained good results from an injection into the anterior chamber, and Ainslie (1946) by application of the crystalline calcium salt to the wound, which gaped. Feigenbaum and Kornblüth (1946) obtained a cure in a case of incipient vitreous abscess with an intravitreal injection.

Suppurating endophthalmitis after a trephine operation was treated by iontophoresis by Dunnington and v. Sallmann (1944b). Woods (1945) found no effect by injections into the anterior chamber in such cases, but Roenne (1946b) and Sorsby and Ungar (1946) obtained promising results from concentrated subconjunctival injections, and Roenne (1946b) and Weizenblatt (1946) retained the eye with complete functional loss after intravitreal injection; Juler (1945) abated the infection by the application of crystals to the trephine bleb.

Sorsby and Ungar (1946) also obtained a similar good result in a suppurating endophthalmitis following a diathermic cauterization for retinal detachment.

2. ENDOGENOUS UVEITIS.

As a general rule intra-ocular inflammations of endogenous origin do not respond well to treatment by penicillin, a circumstance due partly to difficulty in getting the drug into the eye, and partly to the probability that many of such conditions are perhaps allergic rather than directly infective. It is possible that the blood-aqueous barrier is less impervious in inflammation but there is as yet no proof that passage to penicillin is materially altered. The average case of NON-SPECIFIC ACUTE OR CHRONIC IRITIS OR CHOROIDITIS does not respond to systemic injections or, at any rate, not more rapidly than would be expected from the use of ordinary therapeutic agents (Lyons, 1943; Harner and Smith, 1944; Bellows, 1944-5; Goldberg, 1945; Irvinc, Maury, Schultz, Thygeson and Unsworth, 1945;

Scobee, 1945 ; Stine, 1946 ; Lachman and Chacon, 1946). Leinfelder and Paul (1946) found no improvement with the oral administration of the drug.

ACUTE GONOCOCCAL IRIDOCYCLITIS (Dunnington and v. Sallmann, 1944a ; Elliott, 1944 ; Bellows, 1945) or choroiditis (Goldberg, 1945) has responded to intra-muscular injections on several occasions, as also have an endophthalmitis following septic abortion (Brücher, 1944) and other types of METASTATIC ENDOPHTHALMITIS (Pavia and Lachman, 1945). Dunnington and v. Sallmann (1944b) also got a good response in gonococcal endophthalmitis by iontophoresis, and Krause and Rosenberg (1944) in metastatic meningococcic endophthalmitis.

Cases of SYPHYLITIC iritis were reported as having shown striking improvement by Moore, Mahoney, Schwartz, Sternberg and Woods (1944) and Stokes, Sternberg, Schwartz, Mahoney, Moore and Woods (1944). Klauder and Dublin (1945) found that such cases subsided within 12 days after massive doses of intramuscular penicillin. In a later paper (1946) 17 patients with uveitis associated with secondary syphilis were treated exclusively with penicillin except for local ophthalmological treatment ; a total dose of 2,400,000 units was injected intramuscularly in 8 days. A prompt effect was apparent on the ocular lesion, the inflammation disappearing in from 8 to 10 days after the first injection in all but 2 patients for whom the latter period was exceeded. No further treatment was given and no recurrence of ocular inflammation was observed up to a maximum period of 15 months. Controls required 2 to 5 weeks for resolution with chemotherapy and fever treatment. Greeves (1946) also found rapid resolution in cases of syphilitic uveitis and retinitis.

I have seen a case with all the clinical appearances of rapidly progressive SYMPATHETIC OPHTHALMITIS clear up after massive and repeated doses of penicillin given by subconjunctival injections supported by intra-muscular injections. The possible control of this disease by systemic treatment has been recorded by Vorisek (1947).

No result, as would be expected, was obtained in Eales' Disease (recurrent vitreous hæmorrhages) by Fraser and Scott (1946).

To summarize, penicillin is the nearest approach to the ideal anti-infective agent yet seen ; its value in ophthalmology is immense and on occasions revolutionary. It has, however, its limitations, one of which is the difficulty in the preparation of pure supplies in bulk, a difficulty which will doubtless be overcome in time. So far as extra-ocular and orbital infections are concerned, it constitutes the ideal method of therapeutics *provided the lesion is due to an active*

infection by a penicillin-sensitive organism : in this sphere it is without serious rival. Up to the present time intra-ocular infections have not responded so dramatically (in fact, sulphonamides have been of greater clinical value), partly because the preparations of penicillin hitherto generally obtainable have not been of sufficient purity to be tolerated by the ocular tissues and partly because many of these clinical conditions are (presumably) not due to actual organismal infections. The recent introduction of pure penicillin, however, suggests that the first difficulty has been overcome, and the small experience so far available with it is full of promise, particularly by the technique of massive repeated subconjunctival injections. It is probable that its greatest use will be in the treatment of exogenous infections by penicillin-sensitive organisms, in metastatic endophthalmitis, in gonorrhœal uveitis and possibly in syphilitic infections. It must be stressed, however, that the drug is not a panacea, appropriate ancillary treatment is necessary, and even the lavish expenditure of this therapeutic agent will not compensate for the lack of good surgery or provide a cover for inadequate therapeutics.

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Abstracts

TEXT-BOOKS AND COMPOSITE MONOGRAPHS

1. The Science of Seeing.

IDA MANN and ANTOINETTE PIRIE. *Published by the Penguin Books, Middlesex, England (245, Fifth Avenue, New York, U.S.A.), 220 pages, 8 plates, 2 figs.*

A popular book written in lay language dealing with the eyes and vision. The subjects dealt with are—the different kinds of sight in evolutionary history ; the construction of the eyes of animals and men ; the retinal mechanism ; the influence of general health, injury and environment on vision ; facts and fancies about ocular hygiene and spectacles ; the blind, what they do and how they are taught ; and how visual defects are dealt with and what the public should do if they think that their eyes have gone wrong. Altogether a delightful book of a novel type, full of useful information put in a racey and interesting way and with plenty of “do’s” and “don’ts.” Full of common sense and great fun to read. The first adequate answer to Huxley’s “Art of Seeing.”

Stewart Duke-Elder.

HISTORY: EDUCATION

2. The Past, Present and Future of Ophthalmology. (Pasado, presente y porvenir de la oftalmología.)

M. ESTEBAN, *Arch. Soc. Oftal. Hispano-Amer.*, 7, 52-87, Jan., 1947. 14 refs.

In his inaugural address to the Ophthalmological Society of Madrid for the Session of 1946-7, Esteban gave a comprehensive discourse on the history of ophthalmology from the earliest times through the Hindu, Egyptian, Greek, Roman and Arabic epochs, the Middle Ages and Renaissance, to modern times. The address ends with some interesting prophecies as to future advances.

Stewart Duke-Elder.

3. Development of Medical Studies in Britain: Ophthalmology. R. R. JAMES. *Brit. J. Ophthal.*, 31, 179-186, March, 1947. 2 refs.

James traces briefly the course of ophthalmology in Britain from the practices of the Roman occupation to the frank charlatanism of the 18th century, a period of almost two thousand years in which little or no progress was made. Rational ophthalmology began perhaps at the beginning of the 19th century when in some eleven years five special eye hospitals were founded in London and provincial towns ; in this period also, ophthalmic science was graced

by the writings of such men as Thomas Young, Mackenzie, Wardrop and many others, writings which relegated the text books of earlier generations to the deserved obscurity of the upper shelf.

Advances in ophthalmology were perhaps facilitated by the divorce of its practice from that of general surgery. The 19th century, however, contained the names of many men, some like Jonathan Hutchinson—primarily general surgeons—others like Warren Tay, Bowman and Nettleship—pure ophthalmologists—a bald enunciation of whose contributions to clinical, scientific, educational, social and other aspects of the subject must induce a very proper pride in British ophthalmology.

A. J. B. Goldsmith.

4. **Eserine : Its History in the Practice of Ophthalmology.** F. H. RODIN.
Vide abs. 14.]

VEGETATIVE PHYSIOLOGY AND BIOCHEMISTRY

Metabolism.

5. **Biochemistry of the Eyes.** (Biochemie des auges.)

H. VON SULLMANN, *Ophthalmologica*, **113**, 45–61, Jan., 1947; 108–128, Feb., 1947. 140 refs.

A detailed review with annotations of the literature from 1942 to 1946 of work done on the biochemistry of the ocular tissues. The following subjects are treated: Harderian gland, lacrimal gland, the tears, Meibomian gland and secretion, conjunctiva, sclera, cornea, lens, aqueous humour, vitreous body, uvea, retina, and optic nerve.

Stewart Duke-Elder.

6. **The Mode of Entrance of Sodium into the Aqueous Humour.**

E. H. BÁRÁNY. *Acta. Physiol. Scand.*, **13**, 55–61, Feb., 1947. 8 refs.

The author assumes that sodium is secreted into the eye and cannot leave by simple diffusion across the membranes lining this organ, but only by drainage through Schlemm's canal. He considers the possibility, nevertheless, that sodium may enter by an "ultra-filtration" process, as distinct from a simple diffusion mechanism. The penetration of a radio-active isotope of sodium (radio- Na^{24}) into the aqueous humour of the rabbit with one carotid artery occluded was determined; the results on eight animals showed considerable variations, but the author concludes that the occlusion had a negligible effect on the rate of penetration. Arguing that the capillary pressure in the eye homolateral to the carotid closure should be reduced, he states that the results prove that sodium does not enter the eye by an "ultra-filtration" process.

[The notion that a molecule or ion may not enter by simple diffusion but *may* enter by ultra-filtration has no physical meaning ; either the membrane is or is not permeable to sodium ; if it is, then both simple diffusion and ultra-filtration are possible, i.e. the substance can enter independently of water transfer or can accompany it. If the membrane is impermeable to sodium, then both entry by simple diffusion and entry in company with water (ultra-filtration) are excluded. For example, the membrane is impermeable, normally, to protein, and the protein neither enters the eye by diffusion nor by "ultra-filtration" ; in fact the true sense of the term ultra-filtration implies the separation of water and permeable solutes from the impermeable material.]

H. Davson.

7. The Relative Importance of Ultra-filtration and Secretion in the Formation of the Aqueous Humour as Revealed by the Influence of Arterial Blood Pressure on the Osmotic Pressure of the Aqueous.

E. H. BÁRÁNY, *Acta Physiol. Scand.*, 13, 81-86, Feb., 1947. 3 refs.

Osmotic pressure was determined by the Hill-Blades thermocouple technique ; unilateral clamping of the carotid artery had no influence on the osmotic pressure of the homolateral aqueous humour. It is argued that if sodium enters by a combined "ultra-filtration-secretion" mechanism, then the fluids formed by the two processes would have different osmotic pressures. Any modification of the ultra-filtration rate should, on these grounds, modify the total osmotic pressure of the final fluid. The fact that unilateral closure of the carotid does not influence the osmotic pressure of the aqueous leads to the conclusion that ultra-filtration is unimportant.

H. Davson.

8. The Action of Atropine, Homatropine, Eserine and Prostigmine on the Osmotic Pressure of the Aqueous Humour.

E. H. BÁRÁNY, *Acta Physiol. Scand.*, 13, 95-102, Feb., 1947. 9 refs.

Atropine and eserine cause a barely significant lowering of the osmotic pressure of the aqueous humour compared with the untreated, control, eye.

H. Davson.

9. The Influence of Intra-Ocular Pressure on the Rate of Drainage of Aqueous Humour. Stabilisation of Intra-Ocular Pressure or of Aqueous Flow ?

E. H. BÁRÁNY, *Brit. J. Ophthalm.*, 31, 160-176, March, 1947. 2 figs., 22 refs.

The paper describes an attempt to study the influence of intra-ocular pressure on the rate of drainage of aqueous humour, presumably through the Canal of Schlemm, with special reference to

Duke-Elder's theory of a safety-valve mechanism. The approach is entirely indirect and is based on the author's earlier claim (*Nature*, Vol. 158, p. 665) that unilateral closure of the common carotid in the rabbit reduces the intra-ocular pressure by 4 mm. Hg. Under these conditions it is found that radio-active sodium injected intraperitoneally is present in the same concentration in the aqueous humours of both eyes 15 hours later. On the assumption that sodium is "secreted" into the eye, and by invoking earlier measurements on the comparative rates of penetration of sodium into the two eyes when one carotid is occluded, the author deduces that occlusion of the carotid reduces the aqueous outflow by 7 per cent. The paper concludes with a theoretical discussion of the mechanism of reabsorption of aqueous humour in the vessels of the sclero-corneal trabeculum, emphasis being placed on the osmotic relations between the aqueous and the blood flowing through the veins of this plexus. It is concluded, generally, that the factors controlling aqueous outflow are consistent with the conception of a continuous basal outflow as opposed to an irregular leakage demanded by the "safety-valve" mechanism. The importance of a continuous flow of aqueous for the nutrition of the lens is indicated.

[In the abstractor's view, the experimental data prove nothing, however feasible the conclusions; the deductions from the simple primary observation are based on the assumption that sodium enters by secretion in accordance with an equation derived by Kinsey and Grant (*Jl. of Gen. Physiol.*, 1942, 26, 119); this equation has been shown to involve a simple mathematical error which completely invalidates it and the consequent "proof" that sodium is secreted (Duke-Elder and Davson 1943, *Brit. J. Ophthal.*, 27, 431). Moreover the figures quoted for the statement that occlusion of the carotid causes a reduction in the rate of penetration of sodium by 5 per cent., are as follows: 0.71, 0.92, 0.93, 0.96, 0.98, 1.03, 1.22, representing ratios of concentrations in the experimental and control eyes; the mean value taken—0.96—is not significantly different from unity if a simple statistical test is applied.]

Hugh Davson.

Vascular Circulation.

10. Circulatory Studies of the Fundus of the Eye.

P. WEINSTEIN and J. FORGACS, *Brit. J. Ophthal*, 31, 238-243, April, 1947. 2 figs., 4 refs.

It is argued that spontaneous retinal venous pulsation is a sign of a high pressure difference between arteries and veins and therefore a favourable condition for circulation; records are presented indicating that retinal complications occur only half as frequently in the group of individuals showing this sign as compared with a control

group showing no spontaneous pulse. The pressures necessary to elicit arterial and venous pulsations in the retina of individuals showing no spontaneous pulsation are altogether higher than in the other group. Spontaneous venous pulsation disappears in 10 per cent. of cases if the patient lies down, and always if the eye is massaged.

H. Davson.

11. The Importance of the Retinal Venous Pressure. (La valeur de la pression veineuse rétinienne.)

E. REDSLON. At the June, 1946, meeting of the Soc. d'Ophtal. de l'Est from abstract in *Ann. d'Ocul.*, 180, 60, Jan., 1947.

The author emphasises (1) that pulsation of the retinal veins is common and is due to the pulse-pressure of the ocular vessels and not to transmission of the systolic impulse along the venous column of blood; (2) that the retinal venous pressure is remarkably constant thanks to the retinal arterial pressure; and (3) that the retinal venous pressure is influenced by the intracranial pressure through the medium of the cerebrospinal fluid in the vaginal space, and measurement of the former may be used as a guide to the state of the latter.

A. Lister.

12. Researches on the Respiration of the Cornea in Albino Rats. A. BAKKER. *Brit. J. Ophthalm.*, 31, 100-108, Feb., 1947. 2 figs., 5 refs.

Bakker anaesthetised rats by subcutaneous injections of amytal sodium, inserted a tracheal cannula and placed the animals in an air-tight glass-walled box. The tracheal cannula was attached to tubes which passed through the walls of the box, a special device ensuring fresh air for respiration; no part of the animals' respired air came from or entered the box. With the animal *in situ*, the box was filled with saline, which was then run off and replaced by any desired gas. Normal pressure was insured by a manometer attached to the box. The animals' lids were stitched open; the corneae remained sufficiently moist as the surrounding air was saturated with water vapour.

It was found that after 12 hours in pure nitrogen the cornea was clear, no microscopic evidence of injury being found. In pure carbon dioxide the cornea became totally opaque within half an hour. In a mixture of 8% carbon dioxide and 92% nitrogen the cornea again remained transparent without histological evidence of damage; a normal number of mitoses in the epithelium was found after 10 hours exposure to this mixture of gases. 8% carbon dioxide was chosen as this is higher than the tension normally found in the body tissues. Bakker claims that his findings controvert Fischer's view that the cornea possesses a unidirectional permeability to both oxygen and carbon dioxide, the former being able to travel only inwards, the latter only outwards.

Bakker's results seem to show: (a) that oxygen from the surrounding atmosphere is not necessary for the cornea, (b) that diffusion of carbon dioxide from the cornea into the surrounding air is also not essential to metabolism, and (c) that carbon dioxide can, when in high concentration in the surrounding atmosphere, penetrate the cornea and cause death of the corneal tissues.

A. J. B. Goldsmith.

13. Cholinesterase and Acetylcholine Content of Chick Retina with Special Reference to Functional Activity as Indicated by Pupillary Constrictor Reflex.

V. F. LINDEMAN, *Amer. J. Physiol.*, 148, 40-44, 1947.

The retina removed from embryos from incubated eggs of New Hampshire red chickens after appropriate time intervals were extracted with glycine-NaOH buffer and the cholinesterase activity and acetylcholine content determined.

There is a gradual rise of cholinesterase activity up to hatching time, when it levels off. The acetylcholine content, however, rises gradually until the 19th day, when a sharp rise occurs. At the same time, the pupillary constrictor reflex appears. This high acetylcholine level is maintained until hatching, when it falls rapidly and then remains fairly constant. The close relationship which appears to exist between the cholinesterase activity and acetylcholine content and the maturation of neural units is pointed out and it is suggested that the sharp increase in acetylcholine may represent a reserve built up to facilitate the establishment of functional synapses.

British Abstracts.

PHARMACOLOGY AND TOXICOLOGY

14. Eserine ; Its History in the Practice of Ophthalmology. F. H. RODIN. *Amer. J. Ophthal.*, 30, 19-28, Jan., 1947. 7 figs., 10 refs.

In 1840 the British botanist Daniell observed the original pharmacological use of the Calabar bean (*physostigma venenosum*) (Balfour); Esere (native name) was used by the natives of Calabar as an ordeal drug. Its extract is a powerful stimulant of plain muscle and of the ends of the vagus and a depressant of vital centres. In 1855 Christison of Edinburgh experimented with the Calabar bean on animals and upon himself. His experiences are quoted in full. In 1861 Stellwag von Carion lamented that there was no means of contracting the pupil. In 1863 Fraser isolated the essential alkaloid which he called eserine, from the Calabar bean and was the first to observe its effects upon the eye. Argyll Robertson and von Graefe used eserine in the eighteen sixties but not as it is used today. In 1875 Ludwig Laqueur was the first to use it to combat glaucoma.

[This short precis does little justice to an entertaining account of the truly romantic history of eserine.]

A. Lister.

OPTICS, REFRACTION, ACCOMMODATION, OPTICAL APPLIANCES

15. Anomalies of Accommodation.

P. M. LEWIS. Memphis Soc. Ophthal. Otolary. Reported in the *Amer. J. Ophthal.*, 30, 209, Feb., 1947.

Reports of two cases of accommodative insufficiency. The first of a man aged 30 who, showing a slight refractive error, had only 3 dioptries of accommodation : after a holiday his accommodation improved to 4.5 dioptries. The second case was of a woman of 48 who, after correction of her mild hypermetropic astigmatism, developed 9 dioptries of accommodation.

A. G. Leigh.

16. Spasm of Accommodation in the Course of Hodgkin's Disease. (Spasme de l'accommodation au cours de la maladie de Hodgkin.) *Ann. d'Opht.* de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Opht.*, 1947, 11, 1, 10. Case report. Mechanism unknown. A. Lister.

17. A Pre-menopausal Oculo-palpebral Syndrome. (Edema of the Lids, Chemosis, Silent Myopia.) (Syndrome chémosis, hypertonie oculaire.) A. KOUTSEFF.

18. Aplanatic Contact Lenses. (Verres de contact aplanétiques.) M. A. FRITZ, *Bull. et Mém. Soc. Franç. d'Ophtal.*, 59, 379-385, 1946 (pub. 1947). 2 figs., 15 refs. A. Lister.

The idea is advanced of correcting spherical aberration of the cornea by means of aspherical contact lenses. The problem of making such lenses has been solved. A. Lister.

PHYSIOLOGY AND PSYCHOLOGY OF VISION

19. Sensory Mechanisms of the Retina. (with an appendix on electroretinography.) R. GRANIT. 412 pages, 178 figs. Bibliography. *Oxford University Press*, 1947. (Price 35s.)

Granit has published an excellent book summarizing present-day knowledge of the physiological mechanism of the retina, dealing in detail with his own extensive and revolutionary work on this subject during the last twenty years, first at Helsingfors, then at Oxford and finally at the Nobel Institute for Neurophysiology at Stockholm. The book is divided into four sections: (1) Five chapters dealing with electrical excitation and inhibition in the retina and optic nerve; (2) Six chapters dealing with the physiological properties of the rods and cones, the intensity and duration of retinal stimuli in dark and light adaptation, and the phenomena of flicker; (3) Five chapters dealing with the properties of photosensitive substances and the mechanism of excitation; (4) Four chapters dealing with colour reception. There are two appendices, one dealing with the technique of the electroretinogram, the other with its applications to the human eye.

Technically the great advance made by Granit was to devise a method whereby a micro-electrode could be connected with a single nerve-fibre and the changes of potential measured when the peripheral sense organ (rod or cone) connected with this fibre was stimulated by light. His results as applied to lower animals have given rise to his "dominator-modulator" theory of vision. Two different types of response to stimulation are obtained. (1) A *dominator response* sensitive to nearly all parts of the spectrum, the function of which is to make a large range of wave-lengths available for vision. Of these there are two, one apparent in the photopic

retina, the other in the scotopic. (2) A *modulator response* which reacts to a restricted band of the spectrum and, therefore, seems suited to mediate wave-length discrimination (i.e., colour). Of these there are several.

The dominator reactions cover too wide a spectral range to provide any cue for colour discrimination, and it would appear that they mediate the fundamental (dominant) visual sensation of brightness. Specific information confined to special spectral regions is conceived of as modulating this sensation of brightness by colour sensations. Such a theory maintains the essential truth of Thomas Young's generalization of the duality of vision implied in the distinction between brightness and colour, but is polychromatic in its implications as to the latter.

A full bibliography, including recent work on these problems, is appended. A review will appear in the *Brit. J. Ophthalm.*

Stewart Duke-Elder.

20. **Objective Determination of the Conduction in the Central Visual Pathways by Combined Electro-retinography and Electro-encephalography.** (Contrôle objectif de la conductibilité des voies optiques centrales par l'électro-rétinographie et l'électro-encéphalographie combinées.)

M. MONNIER and R. L. JEANNERET, *Ophthalmologica*, **113**, 1-11, Jan., 1947. 5 figs., 18 refs.

When an individual is at complete sensory and mental rest, a rhythmic series of discharges is observed in the electro-encephalogram—the Berger or alpha-rhythm. A light stimulus suppresses this rhythmic discharge after a latent period, and it is thought that this latent period—the *blockage interval*—includes the time taken by the nervous impulses initiated in the retina to reach the cerebral cortex. If the time elapsing between the incidence of light on the retina and the initiation of a discharge in the optic nerve were known, the time required for conduction through the optic pathways could be determined by subtraction from this blockage interval. The electro-retinogram probably provides this information, since the positive b-wave in this record has been shown to be closely linked with the discharge in the optic nerve; the latent period of the b-wave—the time elapsing between the incidence of light on the retina and the beginning of the upward sweep of this wave—is thus a measure of the time consumed by the retinal events (photochemical reaction, etc.) leading to the optic nerve discharge—the *retinal latency*. Blockage interval *minus* retinal latency gives the *conduction time* in the optic pathways.

In a normal individual the average blockage interval was 169

msec. (0.169 sec.) with a foveal light stimulus, a figure agreeing well with other values in the literature when allowance is made for the different conditions and strengths of the light stimuli. The author draws attention to the correspondence of this figure with the latent interval for perception of a light stimulus. The average retinal latency, with a foveal stimulus, was 45 msec., a value likewise agreeing with earlier measurements. The average conduction time in the normal individual was thus $169 - 45 = 124$ msec.

With an individual suffering from a bilateral tabetic partial atrophy of the optic nerve (visual acuity 4/10 in both eyes and a considerable reduction in the visual fields, more so in the left eye than the right) the retinal latency was within normal limits (40 to 60 msec.) although it showed an unusual dependence on the retinal locus of stimulation. The blockage times, on the other hand, were considerably higher—O.S. 310 msec.; O.D. 278 msec.—thus giving an increased conduction time—O.S. 229 msec.; O.D. 264 msec.—compared with 124 msec. for the normal. Moreover, the conduction time was about three times as variable as in the normal individual.

H. Davson.

21. Flash Visual Acuity.

L. C. MARTIN and W. KANIOWSKI, *Nature*, 159, 25-26, 1947.

A study of visual acuity in relation to exposure time was designed partly to discover the effect of wandering fixation on acuity measurements. The test object was a pair of equal adjacent apertures which could be illuminated against a dark background. After each exposure the subject reported whether or not the object appeared double. For the larger angles between the objects (2 and 3 minutes of arc) there is reciprocity between minimum exposure time and visual angle as shown by a graph of $\log(\text{exposure} \times \text{angle})$ against \log intensity. Thus at a given intensity the smaller the angle the longer the exposure required for a given performance and vice versa. Moreover, the higher the intensity the smaller this product. This is also approximately true of the smaller angles for short exposures. On the other hand, for smaller angles, more light is generally needed for a given improvement in performance than would be expected from this curve, the discrepancy increasing with flash duration. The results are consistent with the view that acuity is connected with intensity discrimination and with the necessity for establishing a minimum difference in concentration of photo-products in adjacent retinal areas. Thus, while the reciprocity relations hold for short exposures, with longer exposures the chance of setting up such minimum concentrations is diminished by wandering of the stimulus area over the retina.

British Abstracts.

22. Comparative Visual Acuity and Ease of Reading in White and Coloured Light.

L. C. MARTIN and R. W. B. PEARSE, *Brit. J. Ophthalm.*, **31**, 129-144, March, 1947. 6 tables.

In the first series of tests the limit of resolution of lines on a grating was estimated in white and red light, at brightness levels of each varying from 0.06 to 6.0 foot candles. The technique does not lend itself to abstraction. The results show that the angular resolving limit is about 4% better for red than for white light at 0.6 foot candles; at lower levels the advantage of red light is more marked still; at the lowest levels the ratio of white to red light for equal visual acuity may exceed 2:1. No significant difference between two kinds of red light was noted. In general however, no conclusions can be drawn as to the influence of chromatic aberration on visual acuity owing to the uncertainty of heterochromatic photometry, and the great importance of intensity of illumination.

The second series of tests was made with brightness levels (day-light) of up to 2,500 foot candles, and filters with transmission factors down to 2.2%. In general the results here show that filters decrease acuity by amounts corresponding fairly closely with their transmission factors. Adaptation, however, was very noticeable in the first few minutes after putting on goggles.

In the third series of tests, the ease and speed of reading was estimated in white and red lights at levels of 0.03 to 6.0 foot candles. At the lowest intensities the speed of reading was greater for red than for white light; at higher levels differences were too small to be certainly established. Again, difficulties of heterochromatic photometry, lack of allowance for spherical aberration, and possible alteration in pupil size are factors which preclude the drawing of definite conclusions.

A. J. B. Goldsmith.

23. Permanent Neutral Standards in Photo-electric Colorimetry.

W. KOCH and D. KAPLAN. *Lancet*, **252**, 218, Feb. 8, 1947. 1 graph, 2 refs.

A difficulty arises in colorimetry when the light transmission by the unknown medium is so much less than that by the standard that its readings fall into the lower non-sensitive range of the galvanometer scale. This can be overcome by using neutral transmission filters with the standard so that the light transmitted by the standard is nearer to that of the unknown. Glass and gelatine filters are not stable and do not show the same transmission values over the whole of the spectrum. Woven wire nettings, however, make neutral screens which reduce transmission evenly throughout the visible spectral range by a percentage which depends on the fineness of the mesh and the thickness of the wire. They can be protected by keeping in sealed glass test tubes.

A. J. B. Goldsmith.

24. The Colour Sensitivity of the Retina within the Central Fovea of Man.

L. C. THOMSON and W. D. WRIGHT, *J. Physiol.*, 105, 316-331, Jan., 1947.

Luminosity, dichromatic coefficient and hue discrimination curves have been plotted for a 15' field centrally fixated and displaced 20' and 40' nasally. The less central the field the higher the sensitivity, chiefly to blue, but to some extent to other parts of the spectrum also. It is suggested that the normal trichromacy of foveal vision may be to some extent an artefact caused by the varying sensitivities of one or both receptor pathways in different regions of the retina.

British Abstracts.

25. Binocular Colour Combinations.

R. W. PICKFORD, *Nature*, 159, 269-270, 1947.

When the two eyes were each stimulated by a different colour by means of a stereoscope fitted with Ilford colour filters, it was found that complementary colours combine with difficulty, whereas adjacent colours in the spectrum combined fairly easily. It is suggested that complementary colours combine in the eye, while neighbouring colours combine or may combine in the brain.

British Abstracts.

26. Visual Thresholds of Steady Point Sources of Light in Fields of Brightness from Dark to Daylight.

S. HECHT, *J. Opt. Soc. Amer.*, 37, 59, 1947.

The measurements of Knoll of the brightness of a small spot of light when it first becomes visible against a background whose brightness is varied between dark and daylight can be represented accurately by Hecht's expression for brightness discrimination. The constants in this expression have different values at low and high brightness and two curves are drawn meeting at the transition point from foveal to extra-foveal vision. Brightness discrimination follows the usual pattern in visual function even for a point source.

British Abstracts.

27. Vitamin A in Infective Herpes. A. D. HARRIS and T. MOORE. With an addendum on Dark-Adaptation. K. J. W. CRAIK, S. J. MACPHERSON and A. D. HARRIS. Vide abs. 190.

METHODS OF EXAMINATION

28. A New Binocular Ophthalmoscope for Examining Retinal Detachments. (Sound Film Demonstration.) (Un nouvel ophtalmoscope binoculaire pour l'examen du décollement de la rétine (projection d'un film sonore.)

C.-L. SCHEPENS, *Bull. et Mem. de la Soc. Franç. d'Ophtal.*, 59, 360-363, 1946 (pub. 1947). 1 fig.

This is an inverted image instrument with which, it is claimed,

the entire fundus can be examined. The illumination is by means of a 500 watt Nitra lamp and is twice that given by the Weve lamp, without excessive heating. The fundus may be shown and operated on while being kept under continuous observation. [Is this the answer to the ophthalmic surgeon's prayer?]

A. Lister.

29. Regarding Goniophotography.

R. R. BARRIOS and R. V. BARRIERE, *Amer. J. Ophthal.*, 30, 49-51, Jan., 1947. 10 figs.

Goldman's gonioscopy technique utilise a mirror in the contact lens so that the angle of the anterior chamber can be viewed with the patient seated at the slit lamp. One of the oculars of the corneal microscope can be replaced by a Leica camera and photographs of the angle obtained. Different appearances are obtained by varying the width of the slit, and illustrative photographs are reproduced.

A. G. Cross.

30. Gonioscopy.

E. A. W. SHEPPARD and W. J. ROMEJKO, *Amer. J. Ophthal.*, 30, 159-164, Feb., 1947. 11 fig. 9 refs.

A simplified technique for gonioscopy is described which gives a lower magnification than other methods in use, and is suggested as a method suitable for the beginner as well as an addition to the routine diagnostic armamentarium. Troncoso's goniolens is used and the angle of the eye is examined with the ordinary binocular loupe and the illumination of the ophthalmoscope, from which the head but not the condensing lens has been removed. The major indication for gonioscopy is glaucoma, but its use may be helpful in many other conditions. A description is given of the gonioscopic findings of the normal eye, and the appearances in a group of post-traumatic cases and a group of glaucoma cases. It is pointed out that iridodonesis is much more easily diagnosed by gonioscopy than by other methods.

A. G. Cross.

31. The Clinical Test of the Permeability of the Hæmato-ocular Barrier with Fluoresceine. (L'épreuve clinique de la perméabilité de la barrière hémato-oculaire à la fluorescéine.)

M. AMSLER, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 304-313, 1946 (pub. 1947), 9 figs.

An account was given of the results of tests of the permeability of the ciliary capillaries in a number of different conditions in iridocyclitis, glaucoma, perforating injuries and contusions. The test, which was introduced by Amsler and Huber in 1945, consists of injecting fluoresceine intravenously and observing and measuring its passage into the anterior chamber. [No details are given in the abstract: see *Ophthalmologica*, 111, 156; 112, 226, 1946.]

A. Lister.

GENERAL THERAPEUTICS

32. Evaluation of the Newer Therapeutic Agents in Ophthalmology.

E. A. VORISEK, *Amer. J. Ophthalm.*, 30, 29-40, Jan., 1947. 54 refs.

The newer therapeutic agents evaluated are the sulpha drugs, penicillin and the hypertherm. The now generally well known indications, methods of administration and toxic effects of chemotherapy are reviewed. Of the sulpha drugs, sulphathiazole is recommended for local and sulphadiazine for oral administration. Sympathetic ophthalmia is mentioned as sometimes responding to chemotherapy.

The value of the hypertherm in treating ocular disease is not thought to be well enough known. Its good effect on 18 cases of ocular inflammation is described [but in too general terms to be readily accepted].

A. Lister.

33. The Value of Penicillin in Surgery.

G. A. G. MITCHELL, *Brit. Med. J.*, 41-45, Jan. 11, 1947. 13 refs.

This is an appreciation of the value of penicillin in surgery largely based on experience in the campaign in North West Europe. At least 100,000 casualties in this campaign received prophylactic penicillin treatment which proved to be the "dominant factor in control of infection". Bacteriological confirmation was provided by the fact that 268 out of 560 wound swabs taken when the patient was first admitted to hospital showed "no growth". Both local and parenteral penicillin were responsible for these good results. Comparison with the medical records of the campaigns in North Africa and in Italy emphasize the importance of prophylactic administration of penicillin. Penicillin in prophylaxis is much better than the sulphonamides, and if penicillin is available it is undesirable to give sulphonamides as well. The lower incidence of gas gangrene in North West Europe as compared with the Italian campaign (1.5 per 1,000 as against 10 per 1,000) is also to be attributed largely to prophylactic use of penicillin. Apart from prophylaxis the most striking results of penicillin in treatment was the degree to which it rendered large scale secondary closure of wounds possible. The lessons of war are applicable to peace-time civilian surgery including that of the lids, orbit and eyes.

D. H. Patey.

34. Influence of Penicillin on the Course of Ocular Lesions due to a Toxic Agent.

I. H. LEOPOLD and W. O. LAMOTTE, *Amer. J. Ophthalm.*, 30, 41-48, Jan., 1947. 1 table, 2 graphs, 6 figs., 13 refs.

Experiments were performed on the eyes of six rabbits to ascertain the value of penicillin in preventing secondary infection of burns of

the cornea by a liquid nitrogen mustard gas. The eyes were studied clinically, bacteriologically and histologically.

It was found that in the treated compared to the control eyes, the inflammatory reaction was significantly less, corneal vascularisation was delayed, corneal oedema was slightly less but the rapidity of regeneration of corneal epithelium was not affected. Penicillin sensitive organisms disappeared rapidly from the treated eyes but others continued to flourish. [Secondary infection was allowed a 24 hour start before treatment was begun].

A. Lister.

35. Penicillin Dosage (La posologie de la penicilline).

A. DUBOIS-POULSEN, *Ann. d'ocul.*, 180, 29-36, Jan., 1947.

This article is for the benefit of the many French eye specialists to whom penicillin is now available owing to its general release. It is a guide to its manipulation and administration. Concerning the latter, the author recommends: ointment (such as penicillin, 250 to 300 units per gm. of vaseline and cold cream base) for blepharitis and when it is desired to avoid frequent instillation of drops; drops (1,000 to 5,000 units per cc.) for conjunctival infection or for injection into an infected lacrimal sac; subconjunctival injection (2,500 to 100,000 units per cc., combined with a local anaesthetic) for keratitis and associated with intra-muscular injections for iritis and cyclitis; anterior chamber injections (5,000 units per cc.) for intra-ocular infection; local, in addition to systemic injections for infections of the lids and orbit. Intravitreal injections are recommended only in panophthalmitis when the eye is inevitably blind.

A. Lister.

36. Penicillin Treatment of Hypopyon Ulcers. (La pénicilline dans le traitement des ulcères à hypopyon.) NICOLAS and TEULIERES.

Vide ab. 72.

37. A Case of Pneumococcal Meningitis following Enucleation Cured by Penicillin. (Un cas de méningite à pneumocoque à la suite d'une énucléation. Guérison par la pénicilline.) CLAVEL.

Vide ab. 45.

38. Ocular Ionization Therapy. (Ionothérapie oculaire.)

MORISOT. At the March, 1946, meeting of Soc. d'Ophtal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 57, Jan., 1947.

The author reported the results of 45 years experience with this method.

A. Lister.

39. The Treatment of Malignant Epithelial Tumours of the Eyelids by Radiations. (Radium and X-rays.) (Le traitement des épithéliomas des paupières par les radiations.) M.-A. DOLLFUS.

Vide ab. 152.

GENERAL OPERATIVE SURGERY ANÆSTHESIA, PROSTHESES, ETC.

40. Emergency Ophthalmic Surgery.

D. B. KIRBY, *New York State J. of Med.*, 47, 143-150, Jan. 15, 1947. 6 refs.

The author commences his paper by pointing out that Ophthalmologists certified by the American Board of Ophthalmology are certified as safe, which means that they are capable of looking after all emergency cases and operating if this is essential. Prompt action is often necessary without further advice or aid.

There follows a list of conditions in which an *emergency enucleation of the globe* is definitely indicated and should be done without delay. Cases of endophthalmitis and panophthalmitis may cause the development of meningitis if enucleation is done, and evisceration of the globe should be carried out. This procedure may also be adopted in all cases listed for enucleation with the exception of intra-ocular tumour, sympathetic uveitis or scleritis.

Ruedemann's and Cutler's method of implantation of the acrylic eye into Tenon's capsule are described and results of these newer methods for restoration of motility and improved cosmetic effect are awaited with great interest.

Congenital and infantile glaucoma may present an emergency, and to provide a substitute for Schlemm's canal an emergency filtration operation is indicated.

Acute primary glaucoma in the adult is treated first by the use of miotics and the most successful operation is iridectomy. Posterior sclerotomy is not advocated because of the incidence of hæmorrhage and the necessity for cutting through the retina.

In *cases of recurrence of acute glaucoma* it is well to direct efforts towards conserving the good eye; enucleation of an eye which is manifestly lost is often the safest and best emergency procedure.

The author believes that the use of adrenalin, vitamin K or synthetic parenteral coagulants may cause complications and should be avoided. In cases of secondary glaucoma repeated paracenteses, mydriatic and cycloplegic drugs and injections of foreign protein are indicated.

Vascular disease. Emergency measures may be necessary to preserve sight in spasm or embolus of the central retinal artery. The author advises paracentesis combined with vasodilators.

Emergency enucleation in traumatic cases. In all cases of injury a careful watch must be kept on the good eye and not more than 10 to 12 days should elapse before enucleation if sympathetic ophthalmitis is feared. Where the injuries are extensive the inevitable enucleation may be delayed in deference to the feelings of patient and relatives.

Excision of a protruding iris and suture of the cornea or the use of conjunctival flaps are sound procedures when the injury is corneal, but in severe limbal or scleral injuries enucleation should be considered.

Magnetic foreign bodies within the eye. The exact situation of these can be determined with the Berman localiser. If in the vitreous they should not be dragged back through the anterior chamber but should be removed through a scleral incision, preferably infero-temporal.

Non-magnetic foreign bodies should be removed if the eye will not tolerate them. For this the use of an endoscopic tube may be necessary. Foreign bodies in the orbit should only be removed if they are of wood or organic material.

The diagnosis of sympathetic ophthalmitis. Faulty light projection in a severely injured eye without inflammation should indicate enucleation as the best treatment.

Photophobia, lacrimation and blepharospasm in an injured or operated eye are warning signs of sympathetic ophthalmitis, and if this is accompanied by cells in aqueous and vitreous and a plastic iritis, enucleation should be considered before the sound eye is affected.

Traumatic cataract. If swelling lens matter causes a rise in tension an emergency anterior chamber wash-out may be required.

Dislocations of the crystalline lens. Luxation of the lens through a ruptured sclera may necessitate emergency enucleation of the eye. In partial subluxation loop extraction of the lens may be necessary. Corneoscleral sutures should always be inserted beforehand. A broad iridectomy should be performed ; even so, iris incarceration is almost inevitable.

If the lens dislocates backwards into a fluid vitreous it may be encouraged into the anterior chamber by dilating the pupil and lying the patient on his face. When in the anterior chamber it is imprisoned there by applying miotics to the eye. A loop extraction will finally be necessary.

Emergency surgery of the eyelids. Debridement of the wound margins should be avoided if possible in the repair of eyelid wounds. An overcorrection should be aimed at when suturing the lid margin, to avoid notching. Emergency measures may be necessary to protect the cornea. Plastic surgery is likely to be required at a later date and if so, should be carried out by an ophthalmologist.

Ulcers of the cornea, if progressive, may require an emergency Saemisch section or delimiting keratotomy.

Neuroparalytic keratitis and lagophthalmos. Tarsorrhaphy may have to be performed to protect the cornea.

Malignant exophthalmos. Emergency tarsorrhaphy or intracranial orbital unroofing (Naffziger) may be necessary to prevent corneal ulceration and perforation.

Seymour Philips.

41. Ocular Surgery.

C. S. O'BRIEN, *Arch. Ophthalm.*, 37, 1-7, Jan., 1947. 3 refs.

The author gives some hints on aspects of ocular surgery which are the experience of 20 years' work.

Anaesthesia. Cocaine hydrochloride is still the best local anaesthetic for instillation. The author also injects it, or novocain, beneath the conjunctiva. A retrobulbar injection of 2% novocain with epinephrine 1 : 20,000 results in deep anaesthesia of all intra-ocular structures.

Akinesia. Paralysis of the orbicularis is indicated in any operation in which the globe is to be opened. The author injects 2% novocain over the condyloid process of the mandible.

Preparation for Operation. All patients have epinephrine hydrochloride 1 : 1,000 instilled into the conjunctival sac, and the lid margins and surrounding skin are painted with half-strength tincture of iodine.

Cataract Extraction. All patients have typhoid vaccine, 10-15 million bacilli, injected intravenously two days before operation and another dose of 15-20 million on the day prior to operation. Penicillin ointment is inserted into the conjunctival sac every two hours for two days. A corneo-scleral suture is used and the incision made with keratome and scissors. A peripheral iridotomy is performed, followed by intracapsular extraction with capsule forceps, while the assistant lifts the speculum away from the globe. After the suture has been tied, air is injected into the anterior chamber to prevent the formation of synechiae. Eserine is instilled, and the operated eye only is bandaged. If extra-capsular extraction is performed, capsule forceps are preferred to a cystotome.

Cataract and Primary Glaucoma. When glaucoma complicates the cataract operation the author combines cataract extraction with a Lagrange type of sclerectomy. A flap is ballooned with novocain and turned down to the limbus. The keratome incision is placed well behind the limbus and a piece of sclera removed with a Holth punch. A basal iridectomy is performed, the incision enlarged with scissors and the lens extracted by the intra-capsular method.

Glaucoma. In acute congestive glaucoma a peripheral basal iridectomy is performed through a scratch incision 1.5 millimetres behind the limbus. In glaucoma simplex the author advises cyclo-dialysis, after studying the angle of the anterior chamber to determine the position of dense synechiae and the larger vessels, both of which are to be avoided. After opening the conjunctiva a scleral fixation stitch is inserted just anterior to the area chosen for the scleral incision. The iris reposer should be passed through the attachment of the ciliary body with pushing rather than sweeping movements

and should not be passed too far in to the anterior chamber since Descemet's membrane may be damaged. Almost one half of the attachment of the ciliary body should be torn away. In the author's view the operation has fallen into disrepute through too little dialysis.

Convergent Strabismus. No operation should be performed without first attempting to obtain (1) single binocular vision, (2) normal retinal correspondence and (3) fusion with some amplitude. The operation is done in two stages: firstly, recession of the internal rectus by 5 millimetres, followed in about 3 months by shortening and advancement of the external rectus. No muscle clamp is used in recessions, the muscle sheath is kept intact and catgut is used for suturing both muscle and conjunctiva.

Tumours of the Orbit. The author has abandoned Krönlein's incision and reaches the orbit through a wide lateral canthotomy which is extended upward or downward in the conjunctival fornix.

Seymour Philps.

42. Removal of the Wrong Eye.

H. M. TRAQUAIR, *Brit. J. Ophthalm.*, 31, 8-12, Jan., 1947. 11 refs.

Although this subject is rarely mentioned in text books, there is evidence that such a catastrophe has occurred, just as innumerable wrong teeth have been extracted, or a wrong finger or leg operated upon.

The only fool-proof solution seems to be in the use of local analgesia, but where this is not possible and a general anaesthetic has to be used, the eye to be removed should be marked in some way either by bandaging it or fixing a piece of adhesive plaster on the brow. The surgeon has to take full responsibility and should do this task himself and not leave it to his assistant.

In certain conditions, the eye to be removed is not obviously unlike the other, and as external appearances cannot be relied upon, immediate pre-operative examination of the patient is the only safeguard.

Seymour Philps.

43. An Aid in Facilitating Post-operative Dressing of the Eye in Patients with Akinesis of Lids.

W. D. GILL, *Arch. Ophthalm.*, 37, 82-83, Jan., 1947. 1 ref.

The author recommends the use of a droplet of collodion on the eyelashes to seal the lids in cases where the orbicularis has been paralysed. This method has been found most effective but open to the objection that unsealing the lids was a difficult process.

The objection has now been overcome by placing a short length of silk between the lashes of the opposing lids before sealing them. When the time comes to break the seal, gentle traction on the two ends of this silk thread will achieve it painlessly.

Seymour Philps.

44. **Temporary Blindness Following Retrobulbar Injections of Novocaine-adrenaline.** (*Amaurose passagere a la suite d'injections rétrobulbaires de novocaine-adrénaline.*)

BIDAULT. At the June, 1946, meeting of the Soc. d'Ophtal. de l'Est, from abstract in *Ann. d'Ocul.*, 180, 59, Jan., 1947.

Temporary blindness followed retrobulbar injection of novocaine-adrenaline in a patient with senile macular degeneration. No abnormal change was observed at the time in the retinal circulation and it was suggested that the cause was temporary constriction of either the vessels supplying the macula, or of nutrient vessels to the optic nerve.

A. Lister.

45. **A Case of Pneumococcal Meningitis following Enucleation Cured by Penicillin.** (*Un cas de méningite à pneumocoque à la suite d'une énucléation, Guérison par la pénicilline.*)

CLAVEL. At the March, 1946, meeting of the Soc. d'Ophtal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 54-55, Jan., 1947.

Case report. The enucleation was for glaucoma following hypopyon keratitis six months previously. There was no orbital inflammation. Intrathecal and intramuscular penicillin was given.

A. Lister.

46. **Post-operative Corneal Anæsthesia.** (*L'anæsthésie post-opératoire de la corné.* Dispositif pratique pour la rechercher.) R. and O. DE SAINT-MARTIN.

Vide ab. 90.

47. **A Positive Contact Ball and Ring Implant for Use after Enucleation.**

N. L. CUTLER, *Arch. Ophthalm.*, 37, 73-81, Jan., 1947. 1 ref. 11 figs.

The author has used this new type of implant for one year. Twenty-two patients were operated upon, but in five the implant had to be removed.

The implant is a plastic sphere, 20 mm. in diameter, narrowed anteriorly to permit the attachment of a metal ring of 19 mm. diameter to which the four rectus muscles are attached. The anterior face of the implant is flattened, the antero-posterior diameter of the sphere being 15-16 mm. to allow space in front of it for the artificial eye, and a gold pin fits snugly but not tightly into the anterior aspect of the implant. Latest models of the implant have holes drilled through the ring to allow tissue to grow through it and also slight projections on the inner aspect to hold the muscles in place during operation.

The pin which is made with the implant is attached to the plastic artificial eye, and the eye itself is trimmed down until it is just large

enough to stay inside the lids and show no edge on extreme movement to right or left.

Operation. Local or general anaesthesia may be used. The conjunctiva is incised, the dissection carried back to the fornices, and one of the muscles picked up with a 00 black suture through the tendon and cut from its insertion. This procedure is repeated on the other recti and the eye is removed. The implant is placed within Tenon's space and held there by the pin. The four silk muscle sutures are passed through the ring from below upwards and traction is exerted until 4 mm. of muscle are through the ring. The tendon of the muscle is then looped around the ring and sewn to the muscle belly with a double armed 000 black nylon suture. Each muscle is in turn looped round the ring from below upwards and tied to itself. About half a dozen 000000 double armed black silk sutures are now passed through the conjunctival edge from without inward, taking in the anterior edge of Tenon's capsule. Both needles are carried round and under the ring and out through Tenon's capsule and conjunctiva. When these sutures are pulled and tied, Tenon's capsule and conjunctiva are rolled inward round the ring on themselves.

The central part of the implant remains exposed. The pin is removed and the lids closed over the implant. The dressing is changed on the 5th and 8th days, after which dressings are omitted; the conjunctival sutures are removed about the 12th day and the prosthesis fitted in 18-21 days.

Results. Average horizontal movement, 70°; average vertical movement, 65°.

It is claimed that this implant gives to the prosthesis a larger range and greater spontaneity of movement than any previously used.

Seymour Philips.

48. Plastic Implant into Socket.

F. A. WILLIAMSON-NOBLE, *Proc. Roy. Soc. Med.*, 40, 130-131, Jan., 1947.

Description of a case of Cutler's implantation operation.

Seymour Philips.

49. Some Methods of Lid Repair and Reconstruction. III. Socket Reconstruction with Epidermis.

S. A. FOX, *Amer. J. Ophthal.*, 30, 190-196, Feb., 1947. 8 figs. 2 refs.

The author prefers split skin to mucous membrane for lining contracted sockets, and has slightly modified the technique described by Wheeler in 1921. To obviate taking a stent mould of the socket, the author has a number of acrylic forms, the three largest of which are found to fit most sockets. The largest was 42 × 32 mm.

and the smallest 38×22 mm. They were 3.5 to 4.0 mm. in thickness.

Technique. The lid margins are carefully preserved, but if the tarsal plate cannot be identified, its absence from the lids is of no consequence. The dissection is carried down to the periosteum of the orbital rim in all directions; a canthotomy will make this procedure easier. All fibrous tissue is removed and an acrylic form, chosen that snugly fills the socket. With a Padgett dermatome a piece of epidermis about 3×4 inches and 0.01 inches thick, is cut from the inner aspect of the arm and placed round the acrylic form, epithelial surface inwards. The form should be completely covered with some overlapping. The form is inserted into the socket with the overlap facing outwards, a pressure dressing applied and left undisturbed for seven days. At this stage the dressing is removed, excess graft cut away and the surface irrigated with warm boric acid. The dressing is then re-applied for five more days. After this time the form may be removed, the socket irrigated, and a skeleton conformer inserted. At the end of another week the permanent prosthesis is used.

The same procedure is employed whether the socket is wholly or partially relined, and in either case the graft should cover the whole surface of the acrylic form.

The author prefers the dermatome to the skin knife as the former cuts a graft of absolutely even and uniform thickness. He does not find that skin-lined sockets are more prone to produce a foul smelling discharge than sockets lined with mucous membrane or conjunctiva. He uses penicillin in acutely inflamed sockets and silver nitrate solution for chronic infections.

Seymour Philips.

CONGENITAL DEFORMITIES

50. Cyclopla.

S. GARTNER. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 205, Feb., 1947.

Two cases of cyclops were reported. One a true single eye; the other a fused double eye.

A. G. Leigh.

INJURIES

Radiational.

51. Ocular Histopathology of Atomic Bomb Casualties.

T. F. SCHLAEGEL, *Amer. J. Ophthal.*, 30, 127-135, Feb., 1947.
5 figs., 2 tables, 18 refs.

The histological changes are described in 7 eyes of patients who died as a result of the atom bombing of Nagasaki. The ages of these patients varied from 7 to 54, and all died 27 to 32 days after the bombing. Full clinical data of all patients were not available, but one was said to have lived in a wooden house 2 km. from the centre of the bombing, after which she complained of vomiting,

anorexia and weariness. Loss of hair, diarrhoea, abdominal pain, dyspnoea and death followed. Haematology showed a hyperchromic anaemia and leucopenia. Autopsy showed petechiae of the whole body, ulcer of the right leg, depilation of the head, ulcer of the rectum, pulmonary haemorrhage and hepatic and renal degeneration. This case is said to be typical of the general clinical course.

In the eye, changes in the cornea and lens are said to be due to the direct effect of the radiation, and changes in the other ocular structures to be secondary to the systemic condition. In two cases the cornea was found partially denuded of epithelium, which appeared to be regenerating from the margin. All cases showed vacuoles in the lens, especially in the anterior cortex, but in some cases under the posterior capsule also. In the lens it was noted, too, that the anterior and posterior parts of the capsule were thickened; the anterior capsule was not thicker than might be expected if the section were slightly eccentric, but the posterior capsule was at least 200 per cent. thicker than normal. This feature of thickening of the capsule has been noted in experimental radiation lesions; as regards the other changes, the survival time after bombing was probably too short for marked lesions to develop.

In the uveal tract some cases showed a serous exudation with plasmoid coagula in the anterior chamber and vitreous, and a leucocytic infiltration was found, mild in three cases and marked in three others. In one case of the last group, the choroidal vessels were dilated and packed with leucocytes; in this eye white cells outnumbered red by 10 to 1. In three eyes bacilli were found, in one in the anterior chamber, in another in the vessels, and in the third throughout the entire eye. The white cells were of mononuclear type but did not appear leukaemic.

The retina showed normal vessels but detail was obscured by post-mortem autolytic changes.

It is suggested that the bacillary invasion was due partly at least to a terminal bacteraemia in view of the lack of leucocytic response to their presence. These bacilli would grow in the tissues until killed by the fixing fluid.

It is stated that the radiation dose amounted to 473 r/sq.cm. at 1,250 metres from the centre of the bombing.

[This study would be much more interesting and valuable if full clinical details of the eyes of these atomic bomb casualties were available. It is understood and is to be hoped that these are to be given by another worker. It is also gathered that Japanese workers are publishing papers on the clinical and pathological findings; one may hope that they have taken the opportunity to fix some eyes immediately after death to obviate post mortem autolytic changes, bacterial multiplication, etc. Fuller general clinical details would also be of great interest.]

A. J. B. Goldsmith

Chemical

52. Action of Mustard Gas on Ox Cornea Collagen.

A. PIRIE, *Biochem. J.*, 41, 185-190, 1947.

Mustard gas combines with ox corneal collagen forming a product richer in sulphur, with reduced swelling properties, resistant to pepsin, and insoluble in boiling dilute acid. This product when implanted in rabbit skin caused reactions resembling the symptoms of a mustard gas burn. Staining tests and some analyses suggest that mustard gas combines with the acid groups in collagen.

British Abstracts.

53. Treatment of Lewisite Burns of the Eye with Dimercaprol (BAL).

W. F. HUGHES, *Arch. Ophthalm.*, 37, 25-41. Jan., 1947. 12 tables. 4 figs. 2 refs.

Rabbit corneae were exposed to lewisite, either by instillation of 0.1 mg. liquid onto the centre of the cornea or by exposure to saturated vapour for 30 sec. at 22° C. Such doses usually resulted in perforation of the cornea within two weeks. Six hundred eyes were used. Immediate local opacity was thought to be due to production of hydrochloric acid by lewisite hydrolysis and the later effects to the toxicity of the arsenical. Rate of penetration and persistence of lewisite in the cornea was determined by estimating the arsenic content of the cornea and aqueous humour at varying times after the application. Arsenic corresponding to about 10% of the initial dose was present in the cornea two minutes after application. This fell rapidly, and four hours later the arsenic content was no higher than in the control. Arsenic was detectable in the aqueous humour five minutes after burning, but had vanished 25 minutes later.

The toxicity of BAL was assessed and 10% or 5% solutions in propylene glycol and a 10% ointment were found suitable. Such preparations were found to prevent the development of lewisite lesions, if applied within 5 minutes. Later applications were less effective. The eyes were followed for a week after treatment [a short period for assessment of the final result].

BAL was also effective against lewisite in the eye of the monkey. It was painful, but not harmful to the normal human cornea. BAL treatment removed the arsenic from the cornea within 30 minutes of application of the lewisite.

A. Pirie.

Mechanical

54. Observations on 300 Consecutive Cases of Ocular War Injuries.

J. G. BELLOW, *Amer. J. Ophthalm.*, 30, 309-323. March, 1947. 43 refs. 12 figs.

Each succeeding war has shown an increase in the proportion of ocular injuries to those in other parts of the body. Although the

eyeball forms only 1/375 of the body surface it is affected by a minute flying particle which would pass unnoticed if it lodged in skin or clothing and for this reason the proportion of eye injuries is greater the further the eye from the point of explosion.

Over-all estimates of this proportion vary from 2-15%, but the figures for World War II cannot yet be assessed.

In the present report the author records his findings in 300 consecutive ocular injuries admitted to a U.S. Army hospital.

War Implements producing Ocular Injuries and Proportion of Eye Injuries to other Injuries:

Cause of Injury	Injuries to eyes Only*	Injuries to Eyes, Body, and/or Extremities	Total.
Shell fragment	86	77	163
Grenade fragments	10	5	15
Mine fragments	5	18	23
Blast	6	4	10
Shell fragments and blast	—	1	1
Grenade fragments and blast	1	—	1
Small arms fire	26	8	34
Explosions	5	5	10
Vehicles	3	4	7
Planes	2	—	2
Flying particles (glass, rock, debris, sand, etc.)	18	2	20
Sharp instruments	3	—	3
Blunt instruments	7	—	7
Burns	—	3	3
Fall	1	—	1
Total	173	127	300

* In 52 soldiers the injuries were bilateral.

Causes of Injury in 300 Consecutive Ocular War Casualties.

Type of Injury	Number	Type Total	Total
I. Blast Injuries			13
II. Indirect Injuries			40
III. Direct Injuries:			
(a) Non-penetrating injuries to eyeball		54	
(b) Penetrating injuries to eyeball			
1. Avulsions, ruptures, lacerations requiring immediate enucleation	104		
2. Penetrating injuries with retained foreign body	65		
3. Penetrating injuries without retained foreign body	37	206	
(c) Direct injuries to lids, extra-ocular muscles, orbit		30	290
IV. Burns of eyeball and lids			9
Total			352

Blast injury to the eye.—It may be impossible to distinguish between an injury caused by blast alone and that due to small particles of dust and dirt driven into the eye by the blast. In true

blast cases the injury is caused by the shock of the advancing air wave caused by the explosion and the pressure of this wave may be as high as several atmospheres. Table 3 shows the main ocular lesions in 13 cases of blast injury.

The Main Ocular Lesions and resulting Visual Acuity in 13 cases of Blast Injury.

Optic-nerve atrophy	...	...	...	...	...	2
Choroidal and retinal lesions	...	...	...	...	...	2
Intra-ocular hæmorrhage or vitreous opacity	...	...	...	...	...	2
Changes in the lens	...	...	...	...	...	2
Changes in the iris and pupil	...	...	...	...	...	4
Extra-ocular muscle paralysis	...	...	...	...	...	1
Total	...	...	...	...	...	13

Thermal injuries.—All three cases had corneal opacities. Two were from gasoline fire and one from a plane crash.

Indirect ocular war injuries.—These are due to concussion from a missile striking the tissues adjacent to the eyeball. They affect the posterior segment more frequently than the anterior, perhaps owing to the macula being the most delicate and vulnerable region. Oedema of the disc and retina, choroid ruptures and intra-ocular hæmorrhages may occur.

In crush injuries of other parts of the body a condition known as traumatic liporrhagia retinalis may arise, due to multiple fat emboli from the site of injury.

Direct or contact injuries.—Bullets produce more severe ocular injuries than do fragments of shells, mines or grenades. In 198 direct eye injuries by shells, grenades and mines reported in this paper, enucleation was necessary in 53%. In 25 direct eye injuries by bullets 64% were lost. Direct eye injuries may be contusions, perforations, or penetrations.

Non-penetrating injuries.—These vary from a corneal foreign body to rupture of the globe. Contusion of the anterior segment of the eye may result in hyphæma, deep anterior chamber, iris tears and dialyses, rupture of the pupillary margin, mydriasis, dislocation of the lens and cataract formation. Hypotony is a common finding and does not necessarily signify a perforating wound.

Twenty-seven individuals out of the 300 reported received contusion injuries to the eye and the following lesions were observed. In 11 eyes the posterior segment was chiefly affected, six eyes showing chorioretinitis, one macular hole, one choroidal rupture, two optic atrophy and one avulsion of the optic nerve. There were six cataracts and in one the cataractous lens was dislocated. In four there were corneal opacities.

Penetrating injuries.—These are more likely to affect the cornea than the sclera and the changes resulting from them vary according

eyeball forms only 1/375 of the body surface it is affected by a minute flying particle which would pass unnoticed if it lodged in skin or clothing and for this reason the proportion of eye injuries is greater the further the eye from the point of explosion.

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IV. Burns of eyeball and lids			9
Total			352

Blast injury to the eye.—It may be impossible to distinguish between an injury caused by blast alone and that due to small particles of dust and dirt driven into the eye by the blast. In true

Air or oxygen injection into Tenons Capsule may give valuable evidence in cases where there is some doubt about whether the foreign body is intra-or extra-ocular.

The posterior surgical approach was employed in nearly all attempts at removal, this method having the great advantage that it places the magnet as near the foreign body as possible.

In the 65 eyes containing foreign bodies 29 were magnetic and were removed. In 36 eyes the foreign body did not respond to one or more attempts at removal with the magnet and was considered non-magnetic. Results were as follows: in 20 cases the eye was finally enucleated. In 4, the eye although preserved was totally blind. In 22, the visual acuity was less than 20/200. In 13, visual acuity was between 20/200 and 20/40. In 6, visual acuity was 20/30 or better.

Seymour Philips.

55. The Intra-Ocular Foreign Body.

A series of 72 cases in the B.L.A. H. B. STALLARD, *Brit. J. Ophthalm.*, 31, 12-40. Jan., 1947. 2 figs. 15 refs.

In 72 patients with intra-ocular foreign bodies the author was able to extract 69%, 51% by the scleral route and 18% by the anterior route.

The injuries were caused by a great variety of missiles, but 17 were due to shell wounds, and 14 to land mines, the wound of entry being corneal in 36 cases, scleral in 26; multiple wounds occurred in 2 cases, and in the remaining 9, the entry wound was not detected.

All current methods of localisation are described, but for war surgery in the field the author found the silver wire ring sutured to the limbus to be the most satisfactory procedure, Skeoch's contact glass with metal inset being useful but liable to cause inaccuracies owing to slipping.

In a few patients it was necessary to explore the wound in order to determine whether the foreign body was extra- or intra-scleral.

Multiple wounds will often prevent the patient from sitting up and any magnet used for military surgery must be capable of being used with the patient in the recumbent position. The author found that a magnet shaped like a six inch shell with screw-in terminals, which could be suspended over the theatre table, was the most satisfactory.

The following complications were found in these patients on arriving at hospital:—

Uveal prolapse—7 cases. Traumatic cataract—34 cases. Vitreous prolapse—5 cases. Retinal detachment—2 cases. Vitreous haemorrhage—31 cases. There were 2 patients with endophthalmitis which settled down, and only two eyes were ultimately excised.

The author does not find that the scleral route predisposes to vitreous loss or retinal detachment, and if these complications arise,

they are due to the original injury. There was no instance of vitreous loss during operation in this series. The area of sclera nearest to the foreign body was first treated with diathermy, and a fine suture inserted. After incision in the antero posterior diameter the magnet tip was introduced between the lips of the wound so that it touched the vitreous face, but did not enter the vitreous. The suture was tied immediately the foreign body had been withdrawn.

Visual results were difficult to obtain in many cases due to other injuries etc., but the following list shows the visual acuity of 35 patients before evacuation :—

	6/5	...	...	...	2 cases.
	6/6	...	...	...	5 cases.
	6/9	...	...	...	5 cases.
	6/18	...	...	...	1 case.
	6/24	...	...	...	1 case.
	6/36	...	...	...	2 cases.
	Counting fingers	...	...	...	2 cases.
	Hand movements	...	...	...	8 cases.
Perception of light	} Accurate projection	...	...	...	2 cases.
		Inaccurate projection	...	...	5 cases.
No perception of light	}				2 cases.

Seymour Philips.

56. A Case of a Splinter of Glass in the Anterior Chamber of Four Year's Duration.

W. B. DOHERTY, *Amer. J. Ophthal.*, 30, 177-181. Feb., 1947. 2 figs. 2 refs.

Four reasons are given to support the opening statement that glass is probably the most difficult intra-ocular foreign body to remove from the eye. (a) It cannot be localised by X-rays as it does not show in an X-ray film. (b) In order to see it, very brilliant illumination is needed and a high-powered loupe. (c) Particles of glass are jagged and they adhere to surrounding structures. (d) It is non-magnetic.

Two methods for removing glass from the anterior chamber are given : by opening the anterior chamber and picking the foreign body from it, or making an incision into the anterior chamber with the patient facing downwards which causes the ensuing gush of aqueous to expel the material.

Literature. Several instances of glass in the anterior chamber have been described. At a meeting of the Ophthalmic Section of the Royal Society of Medicine, Purvis described a case where a morgagnian cataract was present, but removal of the fragment was prevented by wedging between the lens and cornea. Azarova,

reporting two instances of glass in the eye following air-raid explosions, noted that glass is well tolerated by the eye. In the first case the glass was embedded in the ciliary body. An attempt at removal was unsuccessful and the patient developed iridocyclitis. After recurring attacks the eye settled down with the glass in situ, and remained quiescent during the period of observation. In the second instance the glass was extruded spontaneously from the original wound after 15 months, but the eye was lost from panophthalmitis.

Case Report. In the case reported by the author the accident was due to an explosion in a glass jar during a chemical experiment. The right eye had to be enucleated immediately. No injury was noted to the left eye but 1½ years later the sight of this eye became worse and the eye was painful. The author first saw the patient three years after the original accident. At that time vision was 20/40 and there was a bullous keratitis. X-ray of the eye for foreign body was negative. However, four months later a piece of glass was detected in the angle of the anterior chamber by means of a lens and hand slit-lamp. Removal was attempted through a keratome incision, but the author is not sure whether this was successful. However, the eye condition improved steadily following the operation.

The author notes that in this type of case the hand slit-lamp is the best source of illumination both for examination and operation, and that cataract knives and keratomes should have a dull black finish to abolish confusing light reflections from their surfaces.

Seymour Philips.

57. Tetanus Following Ocular Injury.
C. LITWIN. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 201., Feb., 1927.

A boy aged 8 years fell and struck a wooden fence sustaining injuries to the right eyelid, face and lip. The wounds were dressed and two weeks later tetanus developed. The patient recovered and later a splinter of wood ½ by ½ inch was recovered from the orbit. This case as a warning that, although tetanus is uncommon, the orbit, dirty wounds in that region should receive prophylactic treatment.

A. G. Leigh.

DISEASES OF THE CONJUNCTIVA

58. Clinical Signs of Diagnostic Importance in Conjunctivitis.
P. THYGESON, *J. Amer. Med. Ass.*, 133, 437-441. Feb. 15, 1947.
16 refs.

The diagnosis of the cause of conjunctivitis is important not only as a guide to treatment—increasingly so since the advent of chemotherapy—but also as a guide to prognosis. Even when laboratory aids are to hand, which is by no means always, a differential diagnosis of real value may often be made by careful observation of details of the clinical picture which tends to be overlooked. Such details which the author discusses are summarized as follows :

Pre-auricular adenopathy: The soft palpable non-tender type is found in acute follicular and inclusion conjunctivitis and sometimes in acute trachoma, but seldom if ever in catarrhal or purulent conjunctivitis; the just visible tender type in epidemic kerato-conjunctivitis and more rarely in herpetic conjunctivitis; the gross, sometimes suppurating type in tubercle, syphilis, leptotrichosis, and lymphogranuloma venereum of the conjunctiva and in oculoglandular tularemia etc. (grouped by the author as Parinaud's oculoglandular syndrome).

Changes at the lid margins: Insignificant ulcerative blepharitis or the residual swelling of stytes harbour persistent staphylococci, or the cause of chronic conjunctivitis may be an unnoticed wart or molluscum nodule or in the cheesy secretion expressible from the ducts of inflamed meibomian glands; chronic lymphatic œdema of the lids is characteristic of the kerato-conjunctivitis associated with lymphogranuloma venereum.

The puncta: An important cause of chronic unilateral conjunctivitis is revealed by the expression of streptothrix concretions from a red dilated punctum.

Conjunctival appearance: Allergic inflammations give a peculiar milky hue; subconjunctival hæmorrhages are most common in Koch-Weeks' and pneumococcal infections (and in metastatic gonococcal conjunctivitis); bulbar chemosis occurs in severe (especially gonococcal) conjunctivitis or, without injection, in trichinosis.

Conjunctival Secretion: A stringy discharge is typical of vernal catarrh. Scanty secretion with acute conjunctival inflammation suggests virus infection.

Papillary hypertrophy: The microscopic variety causes the velvety appearance of many inflamed conjunctivas; gross papillæ, especially near the upper tarsal border are common only in vernal catarrh, but may be seen in severe chronic, especially gonococcal, conjunctivitis. A papilla can be distinguished from a large follicle with the slit-lamp by its vascular core.

Follicular hypertrophy: A few follicles in the fornices are normal in children, but never on the tarsus; follicles on the upper tarsus typify trachoma, on the lower tarsus and fornix follicular conjunctivitis and folliculosis.

Granulomata: Apart from those due to buried foreign bodies and ruptured chalazia they are seen in oculoglandular conjunctivitis especially tubercle and tularemia; those of leptospirosis are associated with typical grey or whitish necrotic foci.

Conjunctival Ulcers: They occur in tuberculosis, oculoglandular tularemia, primary syphilis and acute pemphigus.

Membranes and pseudo-membranes: Fine transient, transparent

pseudo-membranes occur in vernal catarrh ; similar, but less transparent in any acute conjunctivitis (particularly those due to pneumococci or streptococci in children). Thick pseudo-membranes and membranes suggest diphtheria (look at the throat and nose) or hæmolytic streptococcal infection, but also occur in erythema multiforme, ocular pemphigus (look at the mouth), and after extensive radiation [also from excessive treatment with silver preparations and sometimes from local or oral sulphathiazole].

Cicatrization : Scarring of the upper tarsus typifies trachoma, of the fornices, especially the lower, and accompanied by shrinkage, ocular pemphigus ; diphtheria causes diffuse scarring with little shrinkage. Scarring also follows irradiation, e.g. for vernal catarrh.

Phlyctenules : When near the limbus these may have to be differentiated from limbal vernal catarrh, episcleritis or inflammation involving a pingueculum.

Concretions : These are rarely of diagnostic value.

Bitot's spots : They indicate, but perhaps not always, vitamin A deficiency. They are triangular and are made up of fine dry, greasy folds usually concentric with the temporal limbus.

Limbal follicles : On the upper limbus they indicate trachoma. They absorb leaving scars which appear as clear areas in the serrated limbal margin known as Herbert's pits and are best seen by retro-illumination.

Limbal hypertrophy : Papillary excrescences most commonly on the nasal or temporal limbus usually signify vernal catarrh especially when accompanied by chalky concretions known as Tranta's spots.

Extension of limbal vessels : The most typical are those of trachoma crossing the upper limbus. A wide normal limbus may cause difficulty but it has a very regular slightly serrated edge. Invasion of the cornea by capillary loops occurs in old people with arcus senilis.

Marginal infiltrates and ulceration : Isolated marginal infiltrates accompanied by punctate staining point to staphylococcal or, rarely, diplohaemophilic or Koch-Weeks' infection ; trachoma gives scattered infiltrates on the upper half of the cornea ; gross infiltrates in the pupillary zone are typical of epidemic kerato-conjunctivitis. Extensive concentric marginal infiltrates occur in endogenous infections, e.g., in the kerato-conjunctivitis of bacillary dysentery.

Punctate staining : When on the lower half this suggests staphylococci ; on the upper half, trachoma ; associated with filaments, kerato-conjunctivitis sicca ; the lesions of superficial punctate keratitis are relatively few in number compared to the above ; punctate staining also occurs after irradiation [and excessive exposure to U.V.L.].

While certain individual clinical findings are specific to certain diseases, such as the limbal follicles to trachoma, most changes are, when taken alone, not pathognomonic but, when taken with others, build up a picture of what can only be one disease.

A. Lister.

59. Stevens-Johnson Syndrome. Report of a Case.

M. NELLEN. *Lancet*, 252, 326-327. March 15, 1947. 6 figs. 8 refs.

Stevens-Johnson Syndrome. Report of Two Cases.

J. O. MURRAY. *Lancet*, 252, 327-328. March 15, 1947. 2 figs. 4 refs.

This syndrome, alias "erythema exudativum multiforme bullosum with conjunctivitis and stomatitis," alias "erythema exudativum multiforme pluri-orificialis" was described by Stevens and Johnson in America in 1922 though cases of it were first reported in France by Alibert and Bazin in 1822. It is characterised by fever accompanied by severe constitutional symptoms and eruptions of the skin and mucosa of the mouth, eyes and urethra, though one (usually the eyes) or more of these regions sometimes escape. It varies considerably in severity, and complications such as bronchopneumonia may occur. In two of the reported cases it was preceded by lesions of the lips. It lasts for from one to five weeks. The ætiology is unknown and treatment symptomatic.

The skin eruption is maculo-papular sometimes developing into vesicles and bullæ. It appears usually to affect the limbs and genitalia. Fresh lesions may continue to appear for nearly three weeks. Involvement of the mouth, which is apparently a constant feature, varies from simple stomatitis and gingivitis to a severe pseudo-membranous inflammatory process of the tongue, lips, palate, and cheeks. The ocular lesions also vary in severity. They include mucopurulent, purulent, pseudo-membranous and vesicular conjunctivitis, keratitis which may go on to suppuration and perforation, and iridocyclitis. Total or partial blindness is a not infrequent sequel but complete resolution is at least equally common.

The syndrome is differentiated from erythema multiforme by the absence of burning and itching, and by the formation of vesicles in the mouth; from smallpox by the absence of the usual prodromata and by the character and course of the skin eruption; from pemphigus by the development of vesicles from existing papules and not from normal skin (nor does residual scarring of mucous membranes appear to be a common feature).

The case of a man aged 20, described in the first paper, was of moderate severity lasting over a month. A severe purulent conjunctivitis with pseudo-membranes and vesicles developed but the eyes otherwise escaped and resolution was complete. The cases of

the second paper were both boys and were less severe.

An Editorial appears in *Lancet*, 252, 376, March 22, 1947, which points out the identity of the disease described by Hebra as erythema exudativum multiforme and the Stevens-Johnson syndrome.

A. Lister.

60. An Unknown Oculo-glandular Disease. (Maladie oculo-glandulaire jusqu'à présent inconnue.)

M. RADNOT, *Ophthalmologica*, 113, 106-108. Feb., 1947.

A type of conjunctivitis is described [coming into the heterogeneous group of Parinand's conjunctivitis] characterized by hyperæmia and gelatinous swelling of the conjunctiva mainly of the lower lid, little or no secretion, a painful swelling of the pre-auricular gland, systemic symptoms with a rise in temperature after the first 48 hours, and spontaneous resolution in a few days. Bacteriological investigations were negative, and the author suggests that the (hitherto undescribed) malady is due to the virus of fowl pest. The four cases studied were all contacts with diseased poultry in Budapest.

Stewart Duke-Elder.

61. Reiter's Disease.

H. M. KATZIN and B. L. VALLÉE. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 203-205. Feb., 1947.

Case report. The condition does not respond to penicillin or the sulfa drugs. Foreign-protein fever therapy and gold salts give the best results.

A. G. Lelq̄h.

62. Reiter's Disease.

K. W. G. HEATHFIELD, *Brit. Med. J.*, 1, 309-310. March 8, 1947.

Case report.

Seymour Philips.

63. Phlyctenular Kerato-conjunctivitis in a Young Girl Associated with Menstruation. (Kérato-conjonctivite phlycténulaire chez une jeune fille en rapport avec le cycle menstruel.)

P. BARRAT and A. KOUTSEFF. At the June, 1946, meeting of Soc. d'Ophthal. de l'Est from abstract in *Ann. d'Ocul.*, 180, 61-62, Jan., 1947.

In a girl of 14½ typical phlyctenular kerato-conjunctivitis had, for 3 months, developed 48 hours before the onset of menstruation. While there was a strongly positive local reaction to tuberculin, there was no general or ocular reaction. There was evidence of disturbance of ovarian hormones and of the pituitary gland. The complexity of the pathogenesis of phlyctenular ophthalmic was discussed.

A. Lister.

64. A Case of Sporotrichosis of the Conjunctiva. (Un cas de sporotrichose conjonctivale.)

M. BARGY, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 183-185, 1946 (pub. 1947).

Case report.

A. Lister.

65. Denig's Operation for Trachoma ; Three Cases.

N. PINES, *Proc. Roy. Soc. Med.*, 40, 129 and 139-140. Jan., 1947. 8 refs. 4 diagrams.

In Denig's operation a graft of buccal mucosa is implanted in a space made for it in the upper bulbar conjunctiva. It is based on the theory that pannus is due to the direct spread of trachoma from the fornix, through the bulbar conjunctiva, into the cornea. It is only indicated when the pannus is severe and intractable. Three cases in all were shown. Two were improved. The other was shown before and shortly after the operation. The author also quotes his results in 406 other cases, 348 of which were improved.

A. Lister.

66. Loiasis. R. D. C. JOHNSTONE.

Vide abs. 151.

67. Deficiency Diseases in Re-occupied Hong Kong. LYDIA FEHLY.

Vide abs. 196.

DISEASES OF THE CORNEA**68. Post-Influenzal Herpetic Keratitis. (Les kératites herpétiques post-grippales.)**

M. J. LEGRAND. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophthal., Oct., 1946, Published in *Rev. d'Oto-Neuro-Ophthal.*, 19, 21-23, Jan., 1947.

Legrand reports twelve cases of herpes of the cornea occurring during a short epidemic of influenza. Eleven of the twelve showed anæsthesia of the cornea. From the fact that, in some cases, anæsthesia of the cornea preceded the appearance of corneal change the author is of the opinion that the pathogenic agent has its primary effect upon the nerves of the cornea.

G. I. Scott.

69. Interstitial Keratitis Treated with Penicillin Packs.

H. KUSHI. Memphis Soc. Ophthal. Otolary. Reported in the *Amer. J. Ophthal.*, 30, 209-210. Feb., 1947.

Case report. A typical syphilitic case with corneal infiltrates and keratic precipitates. Cotton-wool packs impregnated with penicillin 20,000 units per c.c. applied to the lower conjunctival cul-de-sac for a period of two hours twice per day. Improvement in 24 hours; the eyes showed only slight injection after 10 days.

A. G. Leigh.

70. Some Developments in the Treatment of Keratitis.

J. P. F. LLOYD, *M. Press*, 217, 44-47, Jan., 1947. 8 refs.

This article is a short survey of recent advances in the treatment of various forms of keratitis, including chemotherapy, X-ray therapy, amniotic grafts and contact lenses.

A. Lister.

71. Bilateral Mild Endothelial Dystrophy Complicated by Uveitis with Secondary Glaucoma.

A. W. FELDMAN. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 211. Feb., 1947.

Case report.

A. G. Leigh.

72. Penicillin Treatment of Hypopyon Ulcers. (La pénicilline dans le traitement des ulcères à hypopyon.

NICOLAS and TEULÈRES. At the March, 1946, meeting of Soc. d'Ophthal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 54, Jan., 1947.

For hypopyon ulcers systemic administration of penicillin is of no value. The authors find that while subconjunctival injections are effective they are inconveniently painful in spite of the addition of novocaine. They recommend as a satisfactory alternative the prolonged application to the surface of the ulcer of cotton wool swabs soaked in penicillin, repeated several times a day.

A. Lister.

73. Penicillin and Hypopyon Keratitis. (Pénicilline et kératite à hypopyon.)

LABROY, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 163-168, 1946 (pub. 1947).

Five of them received

outes. A. Lister.

74. Allergy to Endogenous Hormones as a Cause of Keratitis Rosacea.

B. ZONDER, J. LANDAU and Y. M. BROMBERG, *Brit. J. Ophthal.*, 31, 145-155. March, 1947. 5 figs. 19 refs.

In an earlier study of allergic conditions two of the authors found evidence that allergy to their own hormones was found in a certain percentage of cases. Such endocrine allergy can be detected by an intra-cutaneous test to which the implications of a positive reaction may be strengthened by exacerbation of the condition under investigation. In the case of a steroid the test is made with 0.1 mgm. or less, dissolved in 0.1 c.c. of specially purified olive oil, a positive reaction being indicated by the appearance within 24-48 hours of a pink or red papule, slightly elevated and sometimes itchy.

This success led the authors to investigate other less obviously allergic reactions along similar lines, with good results in a high proportion of cases. Among these was keratitis rosacea which is well known to be as obscure in its ætiology as it is resistant to treatment. Six cases, three men and three women, are reported in detail. The disease had persisted for from 4 to 20 years and had proved refractory to recognised methods of treatment in all cases. Intra-cutaneous tests were made with the following hormones: (1) Ovarian series: œstradiol, œstrone, progesterone, pregnandiol; (2) Adrenal series: corticosterone, testosterone, androsterone; (3) Controls: cholesterol in oil. All gave positive reactions only to testosterone.

In one there was also an acute ocular reaction. Each case was then given a course of desensitisation of 20 to 30 daily subcutaneous injections of testosterone. The initial dose varied between .001 and .01 mgm. and was gradually increased up to 1.0 mgm. after which a pellet of 10 mgm. was implanted under the skin. In one case which received a 25 mgm. pellet the keratitis flared up temporarily, probably due to an excessive dose. Local treatment was minimal or none at all.

"The results achieved were complete, and prompt cessation of subjective symptoms" and "considerable improvement or disappearance of limbal and corneal vascularization as well as marked improvement of the facial rosacea." Mild recurrence tended to occur in about 2 months. They responded quickly to a second course of treatment.

In the discussion, the authors point out (1) that the hormone to which these cases were sensitive was not a protein but a steroid of relatively simple structure, (2) that it is produced by adrenal tissue as well as by the testis, (3) that the offending hormone may vary, (4) that while spontaneous remissions are common in keratitis rosacea they conclude from their results that the treatment was specific, and (5) that there may well be other factors in the ætiology of keratitis rosacea.

A. Lister.

75. Superficial Punctate Keratitis. (La kératite ponctuée épithéliale.) R. ROSSANO.
Vide ab. 203.

76. Acute Keratocomus. (Le kératocôn aigu.)

M. AMSLER, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 120-126, 1946 (pub. 1947). 6 figs.

Sometimes, in a classical conical cornea, Descemet's membrane ruptures spontaneously and the sudden absorption of aqueous humour by the substantia propria causes a milky thickening of the centre of the cornea. The acute keratocomus subsides in the course of weeks giving place to consolidation of the thickened area with remarkable improvement in the curvature of the cornea. The radius of curvature has been observed to increase from 4.5 mm. (refraction 75 dioptries) to 6 mm. (refraction 56 dioptries).

Sato's operation of scarification of Descemet's membrane aims at producing this beneficent condition artificially.

A. Lister.

77. Annular Furrowed Marginal Dystrophy of the Cornea.

(Dystrophie marginale de la cornée en sillon annulaire.)

BEAUVIEUX and BESSIÈRE, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 136-142, 1946 (pub. 1947). 5 figs.

Allied to ectatic marginal degeneration of the cornea is a rare condition in which, at the periphery of the cornea, an annular furrow

develops central to an annular opacity resembling arcus senilis. The thin furrowed zone remains clear while the centre of the cornea becomes opalescent. The condition goes on for years, opacification alternating with clearing, while the furrowed zone encroaches slowly upon the central one until it perforates and leads to hypotony and phthisis bulbi. This condition is thought to be a variety of senile marginal degeneration, the cause of which is at present purely theoretical.

A. Lister.

78. Corneal Dystrophy.

B. L. GIFFORD. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 215. Feb., 1947.

Case report.

A. G. Leigh.

79. Endothelial Dystrophy with Complicated Cataracts.

M. J. DRELL. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 210-211. Feb., 1947.

Case report. Operation with uneventful healing.

A. G. Leigh.

80. A Case of Gargoylism.

LOTTE STRAUSS, *New York State J. Med.*, 47, 157, Jan. 15, 1947. 10 refs.

Case history of three-year old girl who showed classical signs of gargoylism with clouding of both corneae.

Seymour Philips.

81. Blood Staining of the Cornea.

M. P. WOOLF. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 211. Feb., 1947.

Case report. The result of a non-perforating injury.

A. G. Leigh.

82. Cholesterol Crystals in the Cornea. (Cristaux de cholestérol dans la cornée.) J. SEDAN and A. VALLES, *Bull. et Mém. Soc. Franç. d'Ophtal.*, 59, 127-136, 1946 (pub) 1947). 4 figs.

A case is reported in which there was a thick plaque of cholesterol crystals—which were identified as such—in the centre of both corneae. The condition was associated with cholesterolæmia and lipæmia of unknown ætiology.

A. Lister.

83. "Blue Haloes" in Atebrin Workers.

IDA MANN, *Brit. J. Ophthal.*, 31, 40-46, Jan. 1947. 4 figs. in colour.

A new industrial disease is described. It occurs in persons who are exposed over a period of months to fine atebrin dust in the atmosphere in which they work and who are not necessarily otherwise particularly sensitive to it. The obvious and almost only symptom is that of seeing haloes round lights. The haloes show the spectral colours but much the most noticeable is the blue.

In affected eyes a yellowish stain is seen on the interpallpebral conjunctiva and is just visible macroscopically on the cornea.

The slit-lamp shows minute dark brown dots on the exposed limbal conjunctiva and a peppering of fine dark yellowish brown particles, 5-10 μ in diameter, over the entire cornea. This peppering is most intense in the lower half which shows fine wavy lines of aggregated particles similar to Hudson's line. The changes are confined to the epithelium. Symptoms and signs disappear when exposure to atebirin ceases.

From experimental and other evidence the author concludes that:—

- (a) The route of affection is direct contamination, not systemic.
- (b) The symptoms and signs are due to a deposit of granules within the epithelial cells.
- (c) The deposit is not atebirin which is soluble, but an insoluble break-down product of it, possibly 2-chloro-7-methoxy-acridone.
- (d) The particles seen with the slit-lamp and which form the diffraction grating responsible for the haloes are granular aggregations within and of approximately the same size as epithelial cells.
- (e) Cure is due to the natural replacement of the old affected cells by new unaffected ones.
- (f) Prolonged severe contamination may cause permanent damage.

A. Lister.

84. Keratitis due to Arsenic. (La kératite arsenicale.)

PAUFIQUE and BONAMOUR, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 71-75, 1946 (pub. 1947).

Two cases are reported of kerato-conjunctivitis due to arsenical poisoning.

A. Lister.

85. Action of Mustard Gas on Ox Cornea Collagen. A. PIRE.

Vide abs. 52.

86. Late Purulent Kerato-iritis due to a Bee Sting. (Kérato-iritis purulente tardive par piqure d'abeille.)

CALMETTES and DEODATI, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 148-151, 1946 (pub. 1947).

Case reported. Cured by penicillin followed by removal of the sting from the anterior chamber.

A. Lister.

87. Technique and Results of Corneal Grafts. (Technique et résultats des greffes de la cornée.)

A. FRANCESCHETTI and M. DORET, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 83-95, 1946 (pub. 1947). 11 figs., 14 refs.

The authors review their work on corneal grafts at the Ophthalmological Clinic at Geneva. Among their recommendations are the following: 1. A classification of the indications for keratoplasty. 2. Pre-operative administration of Vitamin B₂ to prevent a limit vascularisation of the graft. 3. The use of grafts taken within 15 to

60 minutes of the death of the "donor." 4. The making of the graft usually slightly smaller than its "bcd." 5. The use of two special instruments: (a) a localiser for the centre of the pupil, and (b) a protector for the lens to facilitate the cutting of the remains of Descemet's membrane after trephining and the separation of anterior synechiae. 6. Post-operative measures which may be required by individual cases such as: dehydrated ointment with glucose, partial tarsorrhaphy, pressure dressing, installation of "prvine" or the application of "la muqueuse nasale au Bonain" and X-ray therapy.

Of 45 cases operated on between 1943 and 1946, the vision of 31% was improved to 6/60 or better, 24% to between "hand movements" and 6/60; that of 38% was not improved and 7% became worse. The prognosis is worst in cases of total leucoma and best in hereditary corneal dystrophies, old interstitial keratitis, and disciform keratoconus.

In sections of a graft which had remained clear for five years it was observed that innervation was entirely absent.

[Prvine is a "ciba" preparation with an action similar to ephedrine.]

A. Lister

88. Comparison of the Results of Whole Thickness and Partial Thickness of Corneal Grafts. (Résultats comparés des greffes cornéennes transfixiantes et non transfixiantes.)

L. PAUFIQUE, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 96-111, 1946 (pub. 1947).

The author discusses the technique of corneal grafting. For nodular and reticular corneal dystrophies he recommends corneal grafts. If visual acuity is not much less than 6/60 a partial thickness graft is adequate. When visual loss is greater the graft must be of whole thickness though it may be of value to do a preliminary partial thickness graft in such cases.

A. Lister.

89. Concerning Corneal Grafts: Some Indications for Operation. (A propos des greffes de cornée: quelques indications opératoires.) G.-P. SOURDILLE. Annual Congress (1946) of Soc. Franç. d'Ophthal., from abstract in *Ann. d'Ocul.*, 180, 41-42, Jan., 1947.

In this paper and in the discussion which followed it, in which Amsler, Arruga and Franceschetti joined, a number of interesting points were brought out.

A. Lister.

90. Post-operative Corneal Anæsthesia. (L'anesthésie post-opératoire de la cornée.

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Mém. Soc. Franç. d'Ophthal., 59, 112-118, 1946

(pub. 1947). 3 figs.

Attention is drawn to the corneal anæsthesia which apparently commonly follows operations on the eye which involve corneal section. This anæsthesia may lead to trophic changes and may even call for protection by contact lenses.

A. Lister.

91. Researches on the Respiration of the Cornea in Albino Rats. A. BAKKER.

Vide abs. 12.

DISEASES OF THE SCLERA

92. Lobstein's Disease. (Maladie de Lobstein.)

MOUTINHO and C. SILVIO-REBELO, *Bull. et Mém. Soc. Franç. d'Ophtal.*, 59, 169-183, 1946 (pub. 1947). 9 figs., 15 refs.

Two cases presented which were sporadic. The family tree of five generations of an affected family was shown. Besides blue sclerotics and skeletal anomalies, hereditary progressive myopia also occurs.

A. Lister.

DISEASES OF THE UVEAL TRACT

93. Hæmo-culture from the Gums in Certain Forms of Uveitis Associated with Pyorrhea. (L'Hémo-culture gingivale dans certaines formes d'uvéïte s'accompagnant de pyorrhée alvéolaire.)

R. NECTOUX and R. CHERCHEVE, *Bull. et Mém. Soc. Franç. d'Ophtal.*, 59, 299-303, 1946 (pub. 1947).

The making of blood cultures from the gums of patients with uveitis and pyorrhea is described and recommended. Two cases were treated by autogenous vaccines prepared by this method.

A. Lister.

94. Probable Toxoplasmal Chorioretinitis. F. S. RYERSON. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 212-213. Feb., 1947.

Case report: a chorioretinitic lesion near the disc.

A. G. Leigh.

95. Probable Conglomerate Tubercle.

C. K. BARNES. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 213-214. Feb., 1947.

Case report of a tuberculoma in the macular region.

A. G. Leigh.

96. Rubeosis Iridis.

J. V. LISMAN. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 207-208. Feb., 1947.

Case report.

A. G. Leigh.

97. Iritis in Bechterew-Struempell-Pierre Marie Disease.

F. N. GRAUPNER. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 205-206. Feb., 1947.

25% of all cases of this disease are associated with iritis of a recurrent type. The three cases demonstrated were characteristic, showing a gelatinous, fast-disappearing exudate in the anterior chamber, fine dust-like precipitates, and posterior synechiae.

A. G. Leigh.

98. Spontaneous Cyst of the Iris.

J. LAVAL, *Amer. J. Ophthal.*, 30, 55-57, Jan., 1947.

A patient, aged 57 years, suffering from hypernephroma, complained of a painful left eye: he gave no history of trauma. The eye showed moderate ciliary injection and a large, pale brown, cystic swelling filled one-half of the anterior chamber. The mass transilluminated easily and the intra-ocular tension was normal. On account of the hypernephroma the eye was excised and histological examination showed the condition to be a spontaneous cyst of the iris. The report includes a detailed description of the pathological findings and is illustrated by two photo-micrographs.

A. G. Leigh.

99. A New Case of Annular Sarcoma of the Iris and of the Ciliary Body. (Un nouveau cas de sarcome annulaire de l'iris et du corps ciliaire.)

NICOLAS.

M. PRÉ-

Ouest,

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both was the development of typical signs of chronic simple glaucoma. Several similar cases have been reported. Biopsy of the iris may be necessary to confirm the diagnosis.

A. Lister.

100. Choroidal Detachment Following Operation for Retinal Detachment.

J. W. MCKINNEY to the Memphis Soc. Ophthal. Otolary. Reported in the *Amer. J. Ophthal.*, 30, 208. Feb., 1947.

Case report.

A. G. Leigh.

DISEASES OF THE RETINA

101. The Relationship of the Calibre of the Retinal Vessels and Retinal Metabolism. (Calibres vasculaires et métabolismes rétinien.)

FRITZ, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 33-39, 1946 (pub. 1947). 3 figs.

The author recommends the measurement of the calibre of the retinal veins as evidence of the state of the capillary circulation and, therefore, of the health of the retina. He concludes that the mode of branching of the arterial tree is an important factor in the regulation of the distribution of blood to the retina. He finds that all arteries of less diameter than 80 microns give off arterioles at right angles and of a standard diameter of 40 microns regardless of the level at which they arise.

A. Lister.

102. Retinal Arterial Hypotension in Lethal Barbiturate Poisoning. (L'hypotension artérielle rétinienne minima dans des intoxications barbituriques mortelles.)

CH. HENRY. At June, 1946, meeting of the Soc. d'Ophthal. de l'Est, from abstract in *Ann. d'Ocul.*, 160, 60, Jan., 1947.

Among 14 cases of barbiturate poisoning four died in spite of intravenous strychnine. In these the retinal arterial tension was observed to be low. In the ten who recovered it was, at first, particularly high. This suggested, therefore, that the state of the retinal arterial tension is a useful guide to the depth of coma in such cases.

A. Lister.

103. Intravenous Novocaine in the Treatment of Retinal Vein Thrombosis. (La novocaïne intraveineuse dans le traitement des thromboses des veines rétinien.)

S. SCHIFF-WERTHEIMER and G. GAILLARD, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 40-47, 1946 (pub. 1947).

The authors claim successful results after intravenous administration of 1:1000 novocaine to cases of recent branch vein thrombosis, but not when the main venous trunk is affected. [Branch vein thromboses do frequently clear up spontaneously.]

A. Lister.

104. **Retinitis of Coats and Angiomatosis Retinae.** (Rétinite de Coats et angiomatose rétinienne.)

BEAUVIEUX and CLAVEL. At the March, 1946, meeting of Soc. d'Ophthal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 57, Jan., 1947.

Case report demonstrating the vascular origin of the exudative retinitis of Coats.

A. Lister.

105. **Cirroid Aneurysms of the Retina, Face and Brain.** (Anévrisme Cirsoïde de la rétine, de la Face et du Cerveau.)

H. MOUTINHO and C. SILVIO-REBELO, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 48-55, 1946 (pub. 1947). 6 figs.

Case report including retino-photographs and radiographs of the skull.

A. Lister.

106. **Retinal changes in Association with General Diseases Ophthalmoscopic Atlas.** (Altérations de la rétine en rapport avec les affections générales.)

P. BONNET, *Soc. Franç. d'Ophthal. Atlas Ophthalmoscopique*. Masson et Cie, Paris, 253 pp., 36 coloured plates, 47 figs.

This book is the second part of the Atlas of Ophthalmoscopic Conditions published by the Société Française d'Ophthalmologie; it will be remembered that the first volume, published in 1946, was written by G. Rennard. The present volume deals with pathological conditions in the retina associated with general diseases. The subjects dealt with are: cyanosis of the retina, retinal changes in the leucæmias, malignant lymphogranulomatosis, the anæmias, angiomatosis, hæmolytic jaundice, Banti's syndrome, infectious states, and diabetes. There is also a description of the massive venous thrombosis which follows injections of thorium X. The book is an excellent one, and the atlas beautifully printed.

Stewart Duke-Elder.

107. **The Place of Unilateral Renal Disease in Hypertension.** C. HARDWICK and A. BADENOCH, *Brit. Med. J.*, 1, 293-296, March 8, 1947. 4 figs., 3 refs.

The authors discuss three patients in each of whom there were advanced signs of hypertensive retinopathy and unilateral renal disease. Removal of a hypoplastic kidney in one of the patients produced a dramatic fall in blood pressure which remained low over a period of some months during which the patient was observed.

Seymour Philips.

108. **Fundus Findings in Lupus Erythematosus.**

J. LANDOWSKI. N.Y. Soc. Clin. Ophthal. Reported in the *Amer. J. Ophthal.*, 30, 202, Feb., 1947.

In two cases of acute lupus erythematosus, fundus changes were seen which showed similarity in their history and course. The fundi showed some vascular changes and a varying number of small, round, whitish exudates scattered over the retina in the nerve fibre layer and occurring at the bifurcation of vessels. Certain of the lesions were striated and similar to a bundle of medullated nerve fibres. A small hæmorrhage was seen at the centre of some of the exudates. New exudates were seen to form concurrently with the disappearance of old ones.

A. G. Leigh.

109. Macular Lesions due to Endocrine Disease. (Lésions maculaires d'origine endocrinienne.)

E. REDSLOB, *Bull. et Mém. de la Soc. Franç. d'Ophthal.*, 59, 25-32, 1946 (pub. 1947). 8 refs.

The author produces evidence to show that macular changes are sometimes due to endocrine disturbances, and he recommends that these should be sought in all cases of unexplained macular disease.

A. Lister.

110. Ocular Changes in the Blood Dyscrasias.

I. S. TASSMAN.

Vide abs. 184.

111. Atrophy of the Optic Nerve Following Haemorrhage.

P. LEVATIN.

Vide abs. 122.

112. Unilateral Exudative Macular Degeneration Associated with Aneurysms of the Retinal Arteries in Hyperpiesia. (Dégénérescence maculaire exsudative unilatérale et anévrysmes artériels rétiens chez une hypertendue.)

A. KOUTSEFF, P. BARRAT and J. CARBONEL, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 17-24, 1946 (pub. 1947). 4 figs.

Case report. The macular exudate disappeared after two injections of acetylcholine-prostiquine. [Whether this was cause and effect or coincidence was uncertain.] The origin of the vascular disease was thought to be pituitary disease, which was present.

A. Lister.

113. The Juvenile Form of Amaurotic Family Idiocy associated with the Tay-Sachs Type of Macular Degeneration. (Forme juvénile de l'idiotie amaurotique familiale avec dégénérescence maculaire du type Tay-Sachs.)

P. PESME and P. VERGER, *Bull. et Mém. de la Franç. d'Ophthal.*, 59, 56-67, 1946 (pub. 1947). 3 figs.

Two cases are reported of juvenile amaurotic family idiocy, the children of a consanguineous marriage; one had normal intelligence. In both the macular lesions were of the type associated with the infantile (Tay-Sachs) rather than the juvenile (Spielmeier-Vogt or Batten-Mayou) form of this disease—that is, there was the typical cherry-red spot in a white central area of the fundus and not pigmentary degeneration.

A. Lister.

114. Bilateral Retinal and Macular Dystrophy.

A. W. FELDMAN, Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 212 Feb., 1947.

Case report.

A. G. Leigh.

115. Choroidal Detachment Following Operation for Retinal Detachment.

J. W. MCKINNEY.

Vide abs. 100.

116. Retinoblastoma—An Unusual Case.

A. N. LEMOINE, JR., *Amer. J. Ophthal.*, 30, 52-55. Jan., 1947.

The author describes a fatal case of retinoblastoma in a child aged 3½ years where the mass of necrotic tumour tissue in the vitreous was mistaken for an abscess. This view was supported by a culture of the aspirated vitreous revealing pathogenic organisms and a quietening of the eye following the injection of penicillin into the vitreous. Subsequently, the eye became red and was excised.

Microscopy showed the presence of a retinoblastoma which had extended beyond the cut end of the optic nerve. As there was no clinical or radiological evidence of metastasis, the orbit was exenterated and later the intra-cranial portion of the optic nerve was excised. Intra-cranial extension of the growth and superficial metastases occurred and were completely resistant to deep X-ray therapy. The author describes this case to illustrate the following points: (a) An error in diagnosis resulted in death from retinoblastoma. (b) A warning against the use of penicillin injections into the vitreous unless the diagnosis is certain. (c) Support to the view that irritable or painful blind eyes should be excised. (d) The giving of a guarded prognosis despite extensive surgery in all cases where spread has occurred along the optic nerve. (e) The relative resistance of certain types of retinoblastoma to deep X-ray therapy.

A. G. Leigh.

DISEASES OF THE OPTIC NERVE

117. Ring Scotoma after Retrobulbar Neuritis.

F. W. LAW, *Proc. Roy. Soc. Med.*, 40, 138-139. Jan., 1947. 1 fig.

A middle aged patient lost the vision of the right eye within five days in 1942, as a result of retrobulbar neuritis due to disseminated sclerosis. For ten days there was no perception of light, and thereafter recovery began. In July, 1946, the vision was restored to 6/5, and screen examination showed a central ring scotoma.

A. G. Cross.

118. Disappearance of a Hypertensive Papilloedema Simulating Intracranial Tumour. (Disparition d'une stase papillaire hypertensive pseudo-tumorale.)

J. BLUM. From a meeting of Soc. d'Oto-Neuro-Ophtal. de Geneve. Feb., 1945. Published in *Rev. d'Oto-Neuro-Ophtal.*, 19, 61-62. Jan., 1947.

Blum describes the case of a patient with hypertension who developed bilateral papilloedema, with three dioptries of swelling in one eye and four dioptries of swelling in the other. There were very few hæmorrhages and little other evidence of vascular change.

G. I. Scott.

119. Combinations of Phakomatoses. Neurofibromatosis (Von Recklinghausen's Disease) Occurring in Association with a Cutaneous Hæmangioma of the Naso-Frontal Region. (Association de phakomatoses. A propos d'un cas de neurofibromatose de Recklinghausen avec hémangiome cutané naso-frontal.)

M. E. B. STREIFF. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophtal., Oct., 1946. Published in *Rev. d'Oto-Neuro-Ophtal.*, 19, 36-40. Jan., 1947. 2 figs.

Streiff reports a most interesting case of neurofibromatosis with

optic atrophy in a patient with a hæmangioma of the naso-frontal region. The patient also exhibited a left facial palsy and left hemiplegia as well as a paresis of the right superior oblique. The literature is reviewed and attention is drawn to the combination of different types of phakomatosis in the same patient as well as in other members of the same family. *G. I. Scott.*

120. Hereditary Aplasia of the Optic Nerve in Mice. (Ueber vererbliche Aplasie des Sehnerven bei der Maus.)

H. J. BEIN.

Vide abs. 207.

121. Optic Atrophy in Oxycephaly. (Du mécanisme de l'atrophie optique dans l'oxycéphalie.)

G.-P. SOURDILLE and COLAS. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophtal., Oct., 1946. Published in *Rev. d'Oto Neuro-Ophtal.*, 19, 1. Jan., 1947.

The authors discuss the occurrence of optic atrophy in cases of oxycephaly, and, on the basis of their observation of six cases, they regard the atrophy as essentially a sequel to vascular stasis in the nerve-head rather than, for example, to direct bony compression of the nerve. They consider that the recovery of vision following sub-temporal decompression of the skull lends support to this view.

G. I. Scott.

122. Atrophy of the Optic Nerve Following Haemorrhage. P. LEVATIN, *Arch. Ophtal.*, 37, 18-24. Jan., 1947. 14 refs.

The pathogenesis of atrophy of the optic nerve following hæmorrhage is imperfectly understood, but of the many explanations suggested, the author considers that that of retinal ischæmia is the most tenable. He presents a case to support this view. During the period of massive hæmorrhages from a duodenal ulcer in a man of 34, repeated examinations of the blood pressure and the blood count revealed a persistent state of circulatory failure and acute anæmia (at one stage the red cells were reduced to 900,000 and the hæmoglobin to 15%). During the course of the illness the patient complained of the loss of the temporal field of vision in the left eye; two days later the eye became completely blind. Later the patient complained of some disturbance of the vision of the right eye and it was found that there was a contraction of the temporal half of the visual field to 50° and a defect in the inferior nasal quadrant. The patient survived, and on subsequent examination the right eye showed normal visual acuity with an almost concentric contraction of the visual field to five-eighths normal size; the defect in the inferior nasal quadrant had disappeared. The optic disc was somewhat pale with only the inferior quarter a normal pink colour. The left eye was blind and the optic disc uniformly pale and atrophic. In the

right eye the almost concentric contraction of the visual field is explained by the degeneration of the ganglion cells of the peripheral retina as a result of ischaemia. The partial loss of vision followed in a day or so by complete blindness of the left eye is explained by direct involvement of the optic nerve as a result of ischaemia of the small nutrient end-arteries supplying the nerve at the disc.

A. G. Leigh.

123. **Malnutrition in Indian Prisoners-of-War in the Far East.** J. H. WALTERS, R. J. ROSSITER and H. LEHMANN.

Vide abs. 192.

124. **Nutritional Retrobulbar Neuritis.**

F. D. CARROLL.

Vide abs. 198.

125. **Tropical Nutritional Amblyopia.**

H. M. DEKKING.

Vide abs. 191.

126. **Postneuritic Optic Atrophy in Repatriated Prisoners of War.**

W. L. ROBERTS and T. H. WILLCOCKSON.

Vide abs. 195.

127. **Bilateral Optic Neuritis.**

M. J. DRELL. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 214, Feb., 195.

Case report : undetermined aetiology.

A. G. Leigh.

DISEASES OF THE LENS

128. **Proliferation of the Epithelium of the Lens.**

B. SAMUELS, *Amer. J. Ophthal.*, 30, 1-11, Jan., 1947. 28 figs., 6 refs.

The main theme of this article, which is based on observation of 185 cases of non-traumatic cataract, is a summary of the different forms which abnormal activity of the subcapsular lenticular epithelium may take.

Proliferation of the anterior subcapsular epithelium gives rise to various types of acquired subcapsular cataract. The proliferation observed was most rapid when the apparent cause was a severe corneal ulcer, spontaneous iritis or retinal detachment, and slowest in the case of intra-ocular tumours or glaucoma. In a case of sympathetic ophthalmia it was so rapid that mitotic figures were seen among the newly formed cells.

Other interesting points are the invasion of the posterior surface of the lens by anterior subcapsular epithelium when the germinal zone at the lens equator has been destroyed by disease, and the abnormal shapes assumed by the germinal epithelium when released from the forces which normally direct it into lens fibre formation. Among unusual findings were drusen of the lens capsule.

A. Lister.

129. Diabetic Cataract ; Endocrine Cataract.

A. LISTER, *Proc. Roy. Soc. Med.*, 40, 130. Jan., 1947. 1 ref.

Two cases were shown which had lens changes of a type associated with diseases which are known or thought to be due to an endocrine disturbance, namely small white and iridescent opacities confined to the cortex.

A. Lister.

130. Cataract and the Pituitary Gland. (Cataracte et hypophyse.)

J. FRANÇOIS, *Bull. et Mém. Soc. Franç. d'Ophtal.*, 59, 191-201, 1946 (pub. 1947). 2 figs., 11 refs.

A case was reported in which pituitary enlargement was associated with both pressure and endocrine effects and also with the development of posterior subcapsular saucer-shaped lens opacities supposedly of endocrine origin.

A. Lister.

131. Glaucoma Capsulare.

H. S. GRADLE and H. S. SUGAR.

Vide abs. 140.

132. A New Method of Intracapsular Extraction. (Nouveau procédé d'extraction de la cataracte entotalité.)

FROMAGET. At the March, 1946, meeting of Soc. d'Ophtal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 56. Jan., 1947.

The aim of this modification of the usual operation is to make the lens rotate about the upper part of the zonule which acts as a barrier against the vitreous, instead of about its transverse axis. The lens is grasped below its centre, as usual, drawn upwards to rupture the lower part of the zonule. The forceps are then discarded and pressure is exerted on the upper lip of the section and over the lower part of the cornea. The lens is thus made to topple and engage in the lips of the section.

A. Lister.

133. Traumatic Forward Dislocation of the Lens in a Child, with Secondary Glaucoma Cured by Discission. (Luxation traumatique du cristallin dans la pupille chez un enfant. Glaucome secondaire. Discission. Guérison.)

BESSIERE. At the March, 1946, meeting of Soc. d'Ophtal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 56. Jan., 1947.

Extraction of a dislocated lens from the anterior chamber is followed frequently by chronic glaucoma and rapid failure of vision. The author finds discission of such a lens gives a better chance of success in spite of its apparent illogicality.

A. Lister.

DISEASES OF THE VITREOUS BODY

134. Subjective "Lightning Streaks."

R. F. MOORE, *Brit. J. Ophthalm.*, 31, 46-50. Jan., 1947.

The author describes the personal experiences of three observers, including himself, of a symptom complex which he described in 1935.

The condition occurs after middle-age, usually in myopes and more commonly in women, and consists of the association of the development of flashes of light with the simultaneous appearance of spots before the eyes. Brilliant flashes of light of momentary duration are seen chiefly in the temporal field; they occur on movement of the eyes and are never seen at rest. The flashes are very brilliant when first seen but tend to become less noticeable with the passage of time, but they may persist indefinitely. In the majority of cases the condition becomes bilateral. There is a close relationship between the development of the streaks and the appearance of vitreous opacities; if opacities are already present there is usually a history of the development of fresh opacities before the occurrence of the streaks. The immediate cause of the streaks is, in all probability, a shrinking and partial separation of the vitreous which then impinges upon the retina on movement. The more frequent occurrence of the streaks in the outer field is explained by the sentient retina extending further forward on the nasal side, and by the fact that the disc is nasal to the posterior pole and thus the separated vitreous would be nearer the retina on the nasal side. The author emphasises that the streaks have no sinister meaning either at the time or ultimately.

A. G. Leigh.

135. Parasitic Origin of Certain Vitreous Hæmorrhages. (Origine parasitaire de certaines hémorragies du vitré.)

DROUET, THOMAS, HERBEUVAL, HENRY, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 247-255. 1946 (pub. 1947).

Five cases are reported of recurrent vitreous hæmorrhage in which all the usual investigations were negative but in which not only was there a positive reaction to patch tests with ascarides fluid, but the patch testing caused a recurrence of the hæmorrhage.

A. Lister.

136. Recurrent Vitreous Hæmorrhage (Eales' Disease).

H. KUSHI. Memphis Soc. Ophthal. Otolary. Reported in *the Amer. J. Ophthal.*, 30, 210. Feb., 1947.

Case report, probably of tuberculous origin.

A. G. Leigh.

GLAUCOMA AND HYPOTONY

137. The Thalamus and Glaucoma (thalamus et glaucome).

A. MAGITOT. *Ann d'Ocul.*, 180, 1-9, Jan., 1947. 33 refs.

The author, in support of a non- or even anti-mechanical theory of glaucoma marshals the evidence derived from his own observations during 27 years and from a study of the literature. The main points which he makes are:—

- (1) Raised intra-ocular tension is only a symptom of glaucoma and is not the disease itself. Glaucoma may even be present without it.

- (2) Disturbance of capillary circulation, tending to stasis, is of first importance in chronic as well as in acute glaucoma, and in glaucomatous subjects is present in other parts of the body in addition to the eyes.
- (3) Glaucoma is associated with a disturbance of the function of the ductless glands. It is uncertain which gland is primarily involved, but if any one is particularly implicated, the suggestion is made that it is the posterior lobe of the pituitary.
- (4) Also closely associated is a failure of equilibrium of the neuro-vegetative system—sympathetic, parasympathetic, or both.
- (5) Glaucomatous subjects are also frequently psychopathic in that they are abnormally sensitive to psychological and sensory stimuli such as pain and worry.

It is concluded that since glaucoma involves psychological, endocrine, neuro-vegetative, capillo-motor and metabolic irregularities, it is not a disease of the eyes alone. It is a disease of emotion (*l'affectivité*).

The emotional centre is considered to be the optic thalamus because it is (a) a relay station for every type of nervous impulse to and from the brain; (b) a selection station for sensory impulses to the cortex; (c) a receiving centre for certain sensations which strongly affect the emotional state; and (d) is close to and takes part in the activities of important neuro-vegetative centres in the brain-stem and vegetative centres in the hypothalamus. Glaucoma is, therefore, considered to be due to a hypersensitive thalamus.

It is claimed that this theory, while not shedding much light on the pathogenesis of glaucoma, has the merit:—

- (1) Of raising our ideas above the level of the filtration angle.
- (2) Of showing that treatment must not stop at surgical intervention, but must include regulation of the patient's life, sedatives and perhaps even psychotherapy.

A. Lister.

138. Familial Glaucoma. (Glaucome familial.)

L. HAMBRESIN and CH. SCHEPENS, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 219-223, 1946 (pub. 1947). 1 fig.

The paper concerns a family in which glaucoma occurred in six generations, being transmitted as a dominant character and showing anticipation. The common feature in all cases was the dull, flat, brown atrophic iris. Response to both medical and surgical treatment was poor.

The aetiology of hereditary glaucoma is discussed and classified into three distinct types: adult, juvenile, and infantile (hydrophthalmos). Families afflicted with one type seldom show either of the other two.

A. Lister.

139. Incomplete Glaucoma (Le glaucome incomplet).

R. WEEKERS, *Ann. d'Ocul.*, 180, 10-19. Jan., 1947. 3 figs., 21 refs.

Primary chronic glaucoma is presented as a vascular disease affecting, in varying degree, three different parts of the eye—the uveal tract, the optic disc and the retina. When all three parts are affected the clinical picture is complete and shows all three cardinal symptoms—raised tension representing the first part, cupping of the disc the second, and field defects indicating involvement of the two plexiform layers of the retina. Sometimes, however, the glaucoma is, at any rate at one stage, “incomplete” and shows only one or two cardinal symptoms indicating that, up to that stage, only one or two parts of the eye have been affected. Any one symptom may be observed alone or in company with either of the other two.

Among interesting points which emerge in this view of glaucoma are (1) that ocular hypertension is not essential to the development of typical cupping and field changes; (2) that if the fields are properly tested hypertension and cupping very rarely occur without some field defect; (3) that absence of cupping and field defect in the presence of hypertension is due to arterial pressure being high enough to stand up to it; (4) that when field defects are present alone retinal vascular changes can be seen.

A. Lister.

140. Glaucoma Capsulare.

H. S. GRADLE and H. S. SUGAR, *Amer. J. Ophthalm.*, 30, 12-19. Jan., 1947. 1 table, 5 refs.

The authors first review the conditions of exfoliation of the lens capsule of which they have collected 77 cases. It was recognised 80 years before its connection with glaucoma became known, is rare before the age of 55 and in negroes, but is relatively common among Greeks.

They describe five zones of exfoliation and the distribution in the anterior chamber of exfoliated fragments.

Glaucoma developed in 81 per cent. of the authors' cases and they consider that about 7 per cent. of so-called primary simple glaucomas are in reality secondary to obstruction of the mesh work of the filtration angle by fragments of lens capsule and iris pigment—that is, glaucoma capsulare.

In only two of the authors' cases was the glaucoma acute and in both of these its occurrence was thought to be a coincidence. They consider glaucoma capsulare to be essentially of the insidious type and only distinguishable from glaucoma simplex by the finding of exfoliation with slit-lamp or gonioscope; further points of difference are the unusual frequency in the former cases of asteroid degeneration of the vitreous and of spontaneous or operative dislocation of the lens.

Though miotics sometimes control the tension, operation—cyclodialysis or filtration—is usually necessary. It should be followed by a permanent miotic to fix the iris and so prevent further rubbing off of pieces of capsule. Lens extraction, intra- or extra-capsular—does not lower the tension and has an added risk of dislocation of the lens and loss of fluid vitreous.

A. Lister.

141. Glaucoma and Blood Cholinesterase. (Glaucome et cholinestérase sérique.) J. GALLOIS and A.-D. HERSCHBERG. *Bull. et Mém. de la Soc. Franç. d'Ophthal.*, 59, 228-230, 1946 (pub. 1947).

The authors find that the blood cholinesterase content in certain cases of glaucoma is raised and that this content is related to the effect of vasodilators on the intra-ocular tension.

A. Lister.

142. Chronic Glaucoma.

J. SHERNE, *M. Press*, 217, 28-30. Jan., 1947.

The article summarises in a manner suitable for the general practitioner, the clinical picture and present day treatment of primary chronic glaucoma.

A. Lister.

143. Treatment of Chronic Glaucoma by Minimal Doses of Vasodilators (glaucoma chronique et vaso-dilatation élective minima).

J. GALLOIS. *Ann. d'Ocul.*, 180, 20-27. Jan., 1947. 37 refs.

Chronic glaucoma is postulated as being due to the following vascular changes: (a) Inflammation and sclerosis of the choroidal veins, causing venous back pressure and a consequent rise in ocular tension; (b) passive retinal venous stasis due to compression at the edge of the optic disc; (c) sclerosis of the retinal arteries and capillaries, causing field defects and excavation of the disc.

Vaso-dilators may improve the retinal circulation and, therefore, the vision, but simultaneously may raise the ocular tension by their effect on the choroidal vessels. Such double effects have been observed and make imperative extreme caution in the use of vasodilators in treating glaucoma. The aim should be to use the smallest dose which will produce a beneficial effect in order to minimise the opposite effect.

Of the vaso-dilators discussed three are recommended: a mixture of calcium chloride (0.75 gr.) with magnesium hyposulphite (0.80 gr.) in 10 c.c. of normal saline, nicotinic acid (0.03 gr.) and benzyl-imidazoline (0.025 gr.) (the strengths quoted are those for intravenous administration). Acetylcholine and amyl nitrite are not advised.

Certain cases of glaucoma respond well, others badly. In the latter group are acute, secondary, haemorrhagic and long-standing

glaucoma, eyes in which tension is above 50 mm. Hg and certain cases in which the retinal arterial pressure is unduly low.

An initial test of response to a vaso-dilator is necessary before beginning treatment. The test consists of giving one of the above drugs in the stated dose intravenously and observing the ocular tension every 15 minutes for one hour. If the response is favourable the test is repeated two or three times a day for eight days. If the test is passed the above doses are continued, otherwise smaller doses at less frequent intervals may be tried. The vaso-dilator used should be varied in order to find that which is most effective. Miotics should be given in addition only in cases of recurrence of glaucoma.

The experience of 18 years has convinced the author of the value of these drugs provided the rules are kept.

A. Lister.

144. **Four Cases of Chronic Glaucoma Effectively Treated by "Suprachoroidal Sympathectomy."** (Quatre cas de "sympathectomie suprachoroidienne" d'heureuse influence sur le glaucome chronique.)

THOMAS and HENRY. At the June, 1946, meeting of the Soc. d'Ophthal. de l'Est, from abstract in *Ann. d'Ocul.*, 180, 60, Jan., 1947.

The authors consider that cycloclialysis works by putting the local sympathetic nerve supply out of action. They, therefore, practice what they call "supra-choroidal sympathectomy" which consists of detaching the choroid as in cycloclialysis, but without entering the anterior chamber.

A. Lister.

145. **The Production of a Filtering Cicatrix in Glaucoma.**

SIR RICHARD CRUISE, *Brit. J. Ophthal.*, 31, 64-72. Feb., 1947. 10 figs.

The Flap Sclerotomy in the Treatment of Glaucoma.

W. M. DE C. BOXHILL, *Brit. J. Ophthal.*, 31, 72-78. Feb., 1947.

The subject of these two articles is the Cruise anterior sclerotomy. The advantages claimed for it over other filtration operations are that it involves less trauma, avoids an iridectomy and, if Cruise's modified technique is employed, is easy to perform. It is indicated in both acute and chronic glaucoma, even when the latter has not responded to medical treatment, though it is recommended that, in such cases, the ocular tension should first be lowered by one or more retro-ocular injections of novocaine.

The main points in the operation are :—

- (1) Raising a 6 mm. deep conjunctival flap at 12 o'clock, carrying it into the cornea by splitting.
- (2) Fixation of the sclerotomy area by a special hook.

- (3) Opening of the anterior chamber "ab externo" with a Graefe knife through a 5 mm. incision.
- (4) Making, with seissors, two 2mm. forward cuts, one from each end of this incision so that they converge but do not meet. Thus is made a triangular corneo-scleral flap, hinged at its apex.
- (5) Replacement of the conjunctival flap without suturing.
- (6) Post-operative use of miotics.
- (7) Digital massage beginning within 24 hours of the operation.

The aim of this operation and its after-treatment is to allow the aqueous humour to escape into the subconjunctival spaces through a passage lined by endothelium, so that it remains patent. One case is quoted in which this desirable result was found by microscopical section to have occurred. [No statistical analysis of results is given in either article, but in a previous communication (ref. *Trans. Ophthalm. Soc., U.K.*, 60, 33-38, 1940) 86 per cent. successes and 4 per cent. of partial successes are claimed in a series of 60 cases.]

A. Lister.

146. Concerning Vogt's Operation for Glaucoma (Microdiathermy Punctures) and Modifications by the Use of the Pyrometric Electrode. (A propos de l'opération antiglaucomateuse de Vogt (microdiathermo-punctures) et de sa modification par l'emploi de l'électrode pyrométrique.)

L. COPPEZ, *Bull. et Mem. de la Soc. Franç. d'Ophthal.*, 59, 237-244, 1946 (pub. 1947). 4 figs.

The author points out once again that the only sure and safe way of judging the effect of high frequency currents on living tissue is by measuring the amount of heat generated in the tissue by means of a pyrometric electrode. The principle of this electrode is, however, only applicable to flat electrodes of 2.5 mm. diameter used for slow surface applications and not to needle electrodes used for diathermy puncture; but it does not matter so much in the latter case since the lesion produced is small.

A. Lister.

147. Iridencleisis in the Treatment of Iridocyclitis with Glaucoma. (L'Iridencleisis

M., 1946 (pub. 1947).
 and tension treated by iriden-
 cleisis lowered, in 60% vision was improved, in 50% the visual
 were no major complications except recurrence of the

A. Lister.

THE LIDS

148. Pseudo Graefe Phenomenon.

J. F. FILHO, *Arch. Ophthal.*, 37, 308-317, March, 1947. 1 fig., 14 refs.

The author describes a typical case of the pseudo-Graefe phenomenon. The greater part of the paper is taken up with the review

of cases already published in the literature, which are enumerated in condensed form without comment, together with notes on the theories on the pathogenesis of the condition.

Stewart Duke-Elder.

149. A Pre-menopausal Oculo-palpebral Syndrome. (Edema of the Lids, Chemosis, Ocular Hypertension, Retinal Arterial Hypertension, and Transient Myopia). (Syndrome oculo-palpébral de la pré-ménopause. (Edème palpébral, chémosis, hypertonie oculaire, hypertension artérielle rétinienne, myopie transitoires.) A. KOUTSEFF.
Vide abs. 186.

150. Ocular Sporotrichosis.

D. M. GORDON, *Arch. Ophthalm.*, 37, 56-72. Jan., 1947. 3 figs., 60 refs.

A review of the literature of this rare condition shows that, of the forty-seven recorded cases, the lids (16 cases) and conjunctiva (10 cases) were most frequently affected; but lacrimal, corneal, scleral and intra-ocular lesions were also described. The author's case occurred in a woman aged 48, who, a week prior to the onset of symptoms, had rubbed a soiled hand across her eye whilst gardening. The lesion consisted of a granulomatous ulcer of the upper lid associated with swelling and redness. During the course of the next three weeks a chain of hard, rubbery nodules developed deep to the skin and extended to the pre-auricular lymph node, which was enlarged. The skin over these nodules was red and indurated. An intra-cutaneous test was positive and the diagnosis was confirmed by culture. The condition was cured by potassium iodide.

Sporotrichosis is caused by *S. schenckii* (*S. beurmanni*) which gains access to the tissues in many cases as the result of trauma, frequently from a twig or thorn. The incubation period is about 14 days. The condition commonly appears as a granuloma followed a week or so later by the development of a chain-like series of nodules appearing in the course of the regional lymphatics; these nodules may ulcerate. In certain cases nodules appear without the initial granulomatous lesion. The histological picture is not diagnostic, being typical only of a granuloma. Agglutination and complement fixation tests are unreliable but the intra-cutaneous test with the injection of an extract of sporotrichium may be of help. The condition must be differentiated from other forms of fungus infection, syphilis, tubercle, Parinaud's oculo-glandular syndrome and trachoma. The diagnosis is made by the identification of the fungus following the culture, on Sabouraud's medium, of material aspirated from an intact nodule. The prognosis is good but fatalities have occurred following deep extension or generalised dissemination. Treatment is by the administration of potassium iodide to the limit of tolerance and should be maintained for a short time beyond the apparent clinical cure. The average period of treatment is four to six weeks.

A. G. Leigh.

151. Loiasis.

R. D. C. JOHNSTONE, *Lancet*, 252, 250-252, Feb. 15, 1947. 7 refs.

This is a most interesting autobiographical record of loiasis. The author discusses the history of the disease, the life cycle of the parasite (*Filaria loa*, *Dracunculus oculi*, *Filaria oculi humani*), its association with its vector, the mangrove fly (*Chrysops*) which is confined to Central and West Africa, and the clinical picture of the disease. He considers that Calabar swellings are local anaphylactoid reactions of the host to the loa antigen.

The symptoms are principally due to the wanderings of the worm under the skin. The filariæ most commonly appear near the eyes, for which they seem to have a predilection, and few patients have not at some time had a worm in this region. It is in this area that their movements are most easily felt, and they can often be seen wriggling under the loose skin of the lids. Commonly they cross the eye, passing easily and rapidly under the conjunctiva. While they are in this region they may cause swelling, conjunctivitis, lacrimation, and pain. The worms have been seen in the eye within nine months of infection. They have been removed from an eye thirteen years after the patient has left an endemic area, and live filariæ have been seen fifteen years after the patient's return to a temperate climate.

The combination of itching, pain, and irritation caused by the movements of the parasite under the conjunctiva are "simply maddening."

With regard to treatment the author points out that there is no known cure and that "the indiscriminate use of potent drugs in treating loiasis is not only futile but often harmful." The worm is usually easily removed under cocaine anaesthesia which paralyses it, then snipping the conjunctiva with scissors and pinching it out with forceps.

His own case which the author describes in considerable detail is probably the most striking description in the literature. Calabar swellings appeared in the right wrist—at first interpreted as a sprain. There was acute neuralgia and intense itching so marked that he found that a somewhat excessive intake of alcohol was necessary during the evening to give him a restful night. Swellings appeared all over his body, and after returning to England, symptoms were referred to the right eye, followed shortly by a creeping sensation on the globe. There was no difficulty in seeing the filaria under the conjunctiva, and it was removed intact with a needle after cocaineising the eye. The procedure took some twenty minutes and was unpleasant but not really painful. Any unpleasantness (the author states) was well worth the sense of relief on knowing that the worm had been removed. A mild conjunctivitis persisted for several days.

During the following months Calabar swellings developed at an average of about two a week. A second filaria made its first appearance about the last week in June, 1945, near the left eye, and for the next two and a half days it wandered round the eyelids, sometimes passing across the bridge of the nose but always returning to the same eye. It gave the impression that it was anxious to find the conjunctiva but could not do so. During this time it caused no true swelling but often the author could see it clearly under the loose skin of the lids, and throughout the day and the night he was constantly aware of its presence as it seldom remained in any one position for more than a few moments.

A stitch was passed under the filaria when it next appeared, and the suture was tied firmly. Local anaesthetic was then infiltrated and the whole worm removed intact, the small wound being closed with a suture. There was a moderate degree of swelling of the orbital tissues which lasted several days. The author does not recommend this method of removal as simple or completely painless.

A third worm appeared near the right eye in August, 1945. Like its predecessor, it spent some days wandering round, but it differed in the fact that at one time it coiled itself in the outer aspect of the upper lid and formed a small Calabar swelling.

Later in a London hospital he suddenly experienced the most acute pain deep in the right eye. This pain extended up over the frontal region to the top of the head. It was grossly aggravated by even the slightest movement of the eyes, and it was the worst pain that he had ever experienced. No worm had been visible or was felt to be moving for about half-an-hour before the onset of this pain. These symptoms persisted for one and a half hours and then equally abruptly ceased, leaving nothing more than an ache which was worst when the eye was turned. Fifteen minutes later the filaria could be felt crawling over the inner aspect of the conjunctiva, having apparently emerged from the inner canthus. It was rapidly and most efficiently removed by the sister in charge of the ophthalmic department.

The fourth worm was removed from his right eye after wandering round that region for over two weeks. Like the others it seldom seemed content to stay quiet in one place, and throughout this period it was an almost constant source of annoyance and discomfort until it was removed.

The author concludes that the mental distress which the filariæ cause in the wanderings should not be lightly disregarded.

Stewart Duke-Elder.

152. The Treatment of Malignant Epithelial Tumours of the Eyelids by Radiations. (Radium and X-Rays.) (Le traitement des épithéliomas des paupières par les radiations.)

M. A. DOLLFUS, pp. 171, 1947. Published by the *Soc. d'Ophthal. de Paris*.

This is a very detailed report of the work done at the Curie Foundation (Director Dr. Roux-Berger) from 1927 to 1943, presented to the Ophthalmological Society of Paris in November 1946.

In an interesting introduction, Dollfus points out that in 1939 when he was asked to investigate this problem most French ophthalmologists still held to the teaching of Dupuy-Dutemps, V. Morax, Villard and Imre, that surgery was the method of choice for the treatment of these tumours, irradiations of whatever kind being too liable to cause ocular complications. At this date he had himself already been won over to the use of radium and X-rays, but still thought the former the better method. The war years have gradually shown the importance of "contact" X-rays.

The author commences his report with a short history of his subject. This is followed by a reminder of the pathological anatomy and localisation of lid tumours. There is a brief general account of radio-active substances, and a more detailed one of the methods of application of radium. Each chapter finishes with an account of the results obtained by diverse authors and those at the Curie Foundation. A similar account is given of treatment by X-rays.

Ocular complications form the main argument against the use of radiation. They are also one of the main reasons for the close collaboration between the radiologist and the ophthalmologist.

There should be an examination of the eye—

- (a) before treatment, to note the condition of the anterior segment and not to risk ascribing pre-existent lesions to the effect of the radiations ;
- (b) during the applications to follow the reactions of eye and eyelids ; and
- (c) during the months and years following. Most palpebral recurrences come within three years. Cataract may come on imperceptibly eighteen months to three years following radiation.

While excellent results have been obtained by radium, the method of choice is rapidly becoming "contact" X-rays according to the method first described by Chaoul. The essential principle of this method is to apply the main force of the radiation to the surface with a rapid falling off of strength in the subjacent tissues. To do this we require :—

- (a) A very short distance between the tube and the skin.
- (b) Great intensity.
- (c) A weak filter.

Actually the focal point of the X-ray tube is not in contact with the skin, but 2 to 5 cm. from it.

The method carries with it much less risk of damaging the eye than does radium or other methods of applying X-rays.

Treatment by radium (or radon) needles implanted into the growth gives about as good results. The surface application of radium is no longer recommended; the dosage is more difficult and the eye less easily protected.

Whatever method is employed to effect a cure, a sufficient dosage, must be given in one course of treatment for recurrences do not yield to radiation. It is for recurrences that surgery (scalpel or diathermy) still plays a part.

Dollfus gives a detailed account of all the ocular complications and the times of their appearance.

He doubts whether contact glasses made of lead covered with wax or not are any use in protecting the eye. They may in fact cause trouble by producing secondary radiations. The best protection is given by the palpebral tissues themselves, by a sufficient thickness of wax or paraffin or by an exact focusing of the X-rays.

A biopsy should always be done before radiation.

An inflamed lesion should not be radiated as inflammation makes it much more radio-resistant. Also a common accompanying conjunctivitis should be treated before radiation. But all lotions, drops or ointments containing metallic salts or heavy metals such as argyrol, protargol, etc., are contra-indicated. The metallic particles may determine a secondary radiation and give rise to a severe conjunctivitis or even intra-ocular damage. Tincture of iodine, mercurochrome, and leucoplast are also contra-indicated.

The final results of cases treated by radiation show a very high percentage of cures (over 80%). In a remarkable consecutive series of 70 cases treated by contact X-rays, 93% were cured with no ocular complications.

The author comes to the surprising conclusion that, contrary to the hitherto current view, epithelioma and basal celled carcinoma are equally sensitive to radiation, the percentage of cures in the two conditions being approximately the same.

No attempt, on the other hand, should be made to radiate malignant melanomata which are particularly resistant both to X-rays and radium.

Eugene Wolff.

153. Epithelioma of Krause's Glands. [Epithélioma des glandes de Krause (avec projections de microphotographies.)].

BESSIERE and CORCELLE. At the March, 1946, meeting of the Soc. d'Ophtal. de Bordeaux et du Sud-Oest, from abstract in *Ann. d'Ocul.*, 180, 58, Jan., 1947.

Case report.

A. Lister.

154. A Simple Method of Removing Eyelashes by Electrolysis. J. S. GUYTON. *Amer. J. Ophthalm.*, 30, 57-58, Jan., 1947.

The author describes a simple, inexpensive apparatus consisting of a 45-volt battery, a 22,000-ohm resistance and a fine straight needle. The patient grasps the positive pole of the battery between his finger and thumb, which have been moistened with saline; the fine needle, connected in series with the 22,000-ohm resistance to the negative pole of the battery, is inserted into the hair follicle. By this method a current of between 0.2 to 2.0 ma. passes through the patient's body and this is sufficient to generate at the cathode (the needle) sufficient hydroxyl ions to destroy the hair follicle in 5 to 30 seconds.

A. G. Leigh.

THE LACRIMAL APPARATUS

155. A Survey of the Results of Lacrimal Strictureotomy.

I. LLOYD, *Brit. J. Ophthalm.*, 31, 51-54, Jan., 1947. 1 ref.

This paper describes a method of treating a stricture of the upper end of the naso-lacrimal duct, which is established in French clinics. The lower canaliculus is slit for a short distance from the punctum and dilated with a No. 3 sound. The strictureotomy knife (the design of which is not described) is then passed into the sac, engaged in the neck of the sac, turned vertically and rotated forwards. Immediate dilatation is carried out with gum elastic sounds, Nos. 11 to 14, the last being left in situ for 10 minutes. Subsequent dilatation is carried out fortnightly for two months. The results are described in 33 cases; complete cure occurred in 52 per cent. while a further 24 per cent. were improved. Failures in the technique occurred with impassable bony stricture, very tight stricture, and lacrimal abscess. The advantages are that treatment can be carried out in the out-patient department, that no scarring of the skin occurs, and that further surgical procedure is not prejudiced.

A. G. Cross.

156. Dacryocystorhinostomy.

W. D. GILL, *Amer. J. Ophthalm.*, 30, 198-200. Feb., 1947.

The author states that the essential difficulty in the operation of dacryocystorhinostomy is the suturing of the edges of the lacrimal sac to the nasal mucosa. He describes a method of performing the operation which abolishes the necessity for this suturing and which has, in his practice, given satisfactory results during the past fifteen years. [No figures are given in support of this statement.] The lacrimal sac is exposed and divided at its point of entrance to the naso-lacrimal duct. It is elevated from the fossa as far as the internal canthal ligament. An opening at least one centimetre in diameter is made in the bone of the lacrimal fossa and the nasal mucous membrane opened by a cruciate incision. The lacrimal sac is slit for a

short distance on its anterior surface, upwards from below, and a small (10 or 14 F.) rubber catheter is introduced. The upper end of the catheter is transfixed by a double needled suture of 00 or 000 plain catgut, and the needles are passed through the apex of the lacrimal sac and out through the skin about $\frac{1}{4}$ of an inch apart. Further sutures can be used to stretch the sac down the catheter, which is then introduced into the opening in the nose so that its lower end appears through the nostril. As the catheter is pulled into the nose, the lacrimal sac will accompany it, and the walls of the sac will come into contact with the nasal mucous membrane. The skin incision is closed in the usual way. The catheter can be removed in about five days when the sutures have been absorbed. It is pointed out that the passage of lacrimal probes may, subsequently, be required to maintain patency. [The author states that it is desirable to avoid cutting the internal canthal ligament and that, if this is done, it must be carefully sutured. He does not give reasons for this statement which conflicts with the usual teaching that section of the ligament is essential for adequate exposure of the sac and for provision of an adequate opening to the nose, and that repair by suture is not necessary.]

A. G. Cross.

THE ORBIT

157. Involvement of the Orbit in Chronic Inflammation of the Frontal Sinus.

M. C. BENFORD and H. BRUNNER, *Amer. J. Ophthal.*, 30, 297-308. March, 1947. 9 refs. 10 figs.

The authors describe three patients in detail each of whom presented a mass in the superior part of the orbit, in one instance bilaterally.

Case 1 was a man aged 32 with a small lump in the inner and upper aspect of the left orbit of 8 years' duration, which varied in size, becoming smaller after a discharge of mucus from the nose. Eye movements were normal and there was no exophthalmos. A tentative diagnosis of mucocoele of the ethmoid was made. Operation revealed a tumour the size of a date attached to the posterior lacrimal crest, which was removed by blunt dissection. Recovery was uneventful. Histologically the tumour consisted of connective tissue, striped muscle, blood vessels and nerve fibres, the blood vessels being surrounded by lymphocytes and plasma cells. In some areas these accumulations of lymphocytes reached such proportions that they could be seen macroscopically. The diagnosis was pseudo-tumour of the orbit, as described by Birch-Hirschfeld. There was apparently no fistula between the tumour and the paranasal sinuses.

Case 2 was a woman aged 21 who had had a swelling at the inner

canthus of the left eye for twelve years, following an injury in that area. This swelling also was above the medial palpebral ligament. At operation a chronic osteomyelitis of the frontal bone was found without pus formation but with exuberant granulations.

The condition of the patient did not allow of removal of the diseased bone, and so the infected area was drained into the nose. The tumour had in fact been caused by granulation tissue in this case. The Wassermann and Kahn tests were negative.

Case 3 was of a man aged 61 who had had a swelling above both eyes for 3 years. That on the right was on the lateral side of the upper lid, and that on the left was at the upper and inner angle of the orbit. Both tumours fluctuated and both could be felt to protrude through a hole in the floor of the frontal sinus.

At operation the swellings on both sides were found to consist of polypi protruding through a perforation in the frontal sinus floor. Both frontal sinuses were full of polypi, as was also the right ethmoid. Apparently the perforations had been caused by pressure from the polypi rather than infection.

Seymour Philips.

158. Malignant Orbito-facial Tumours of Reticulo-endothelial Origin. (Les tumeurs réticulaires malignes orbito-faciales.)

J. DELARUE and G. OFFRET. At the June, 1946, meeting of the Soc. d'Ophtal. de l'Est, from abstract in *Ann. d'Ocul.*, 180, 63, Jan., 1947.

Study of 15 cases of such tumours produced the following points:

(1) the variety of forms which they may take (undifferentiated, myeloid, lymphoid, etc.); (2) the good prognosis in adults, the tumours responding well to X-rays, although tending to reappear in other places but always in the region of the face; (3) the relatively bad prognosis in children.

A. Lister.

159. Multiple Capillary Hæmangioma of the Skull Bones.

A. S. HANDOUSA BEY, *Brit. J. Surg.*, 34, 326, Jan., 1947. 4 figs., 1 ref.

Case report of male age 36 years, with unilateral proptosis and swelling of the optic disc. X-ray showed two wheel-like shadows distending the diploic part of the frontal and parietal bones. A piece of bone removed at the operation showed capillary angiomas.

Treatment given was deep X-ray therapy.

Seymour Philips.

160. An Orbital Tumour of Difficult Diagnosis. (Tumeur orbitaire de diagnostic bien difficile.)

G. OFFRET. At the June, 1946, meeting of the Soc. d'Ophtal. de l'Est, from abstract in *Ann. d'Ocul.*, 180, 63, Jan., 1947.

Unilateral exophthalmos in a man of 45 was not affected by removal of a large paranasal tumour from the corresponding maxillary antrum. Orbitotomy revealed a tumour of the inferior rectus which was shown by biopsy to be a malignant reticulo-endothelioma. Response to X-rays was good.

A. Lister.

161. A Plea for Lateral Orbitotomy (Kronlein's Operation.)
H. B. STALLARD. *Brit. Med. J.*, 1, 408-409. March 29, 1947.
5 refs. 1 fig.

In the opinion of the author the approach to the orbit through its lateral wall is preferable to the transfrontal route in cases where the neoplasm is confined to the orbit and does not extend into the cranial cavity. Careful investigations before operation can usually discover whether or not this is so—a view supported by Harvey Jackson.

It has been said that Kronlein's operation leaves an ugly scar, but the author thinks that is not so. By suturing the incision in two layers, and with atraumatic needles, the scar is reduced to a thin line which is not obvious.

The author gives an account of a patient with tumour of the left optic nerve, which was not found on transfrontal exploration but was revealed six months later by lateral orbitotomy. The patient was a woman of 33, who had had left proptosis for more than a year before the author saw her. The eye was proptosed forwards and upwards, and there were multiple swellings in the skin of the right arm, back, chest, abdominal wall and left leg. Her refraction had changed from 5.5 dioptries of myopia to 1 dioptre of hypermetropia, and there was papilloedema and pigmentary disturbance of the macula. Visual acuity was reduced to hand movements and there was severe lower visual field loss. A diagnosis of neurofibromatosis was made.

Operation.

A curved incision was made 5 mm. behind the lateral margin of the orbit and coincident with its curve, and a horizontal incision backwards for 4 cm. from the centre of this. The periosteum was incised along the lateral margin of the orbit, and stripped from the orbital aspect of this wall. The lateral orbital wall was removed by means of a Gigli saw introduced through a hole drilled in the bone above the external angular process, and a second saw cut was made in the plane of the floor of the orbit. This piece of bone was then placed in a bowl of warm saline. The orbital periosteum was incised along the lower border of the external rectus and the orbital fat separated with a blunt dissector to disclose a neoplasm within the muscle cone and mainly below the optic nerve. It was freed by blunt dissection and measured $30 \times 23 \times 16$ mm. Histologically it was a neurofibroma. The lateral wall of the orbit was replaced and a split rubber drain passed into orbit at the junction of the lateral wall and the floor. The incision was repaired in two layers.

The left vision recovered to 6/6 with -5.25 sphere and the visual field defect improved by 35° .

In an annotation in the *Brit. Med. J.*, 1, 419, March 29, 1947, methods of diagnosing and localising orbital tumours are discussed. From a surgical point of view, the inadvisability is pointed out of pressing a claim of universality for any single technique of orbitotomy. Five surgical approaches are available, and for all five there is a place—lateral osteoplastic orbitotomy, transfrontal orbitotomy, anterior external orbitotomy, anterior transconjunctival orbitotomy either at the nasal or temporal side, and, finally, when the nasal sinuses are also involved, an approach through them.

Seymour Philips.

THE OCULAR ADNEXA

162. Involvement of the Orbit in Chronic Inflammation of the Frontal Sinus.
M. C. BENFORD and H. BRUNNER.

Vide obs. 157.

THE OCULAR MOVEMENTS

Physiology

163. A Motor Driven Ophthalmotrope.

M. J. REEH, E. W. STIMMEL and F. V. HEAGEN, *Amer. J. Ophthalm.*, 30, 58-59, Jan., 1947. 3 figs.

This device consists of two large model eyes fitted with extra-ocular muscles which are operated by two electric motors. It is designed to demonstrate unusual and abnormal functions of the muscles to students.

A. Lister.

164. Two Cases of Ocular Synkinesis. (Deux cas de syncinésies oculaires.) BEAUVIEUX and NICOLAS.

A Case of the Marcus Gunn Phenomenon. (Un cas de phénomène de Marcus Gunn.) DOUCET.

At the meeting of March, 1946, of Soc. d'Ophtal. de Bordeaux et du Sud-Ouest, from abstract in *Ann. d'Ocul.*, 180, 53, Jan. 1947.

Several cases were reported, with photographs, of variations of the jaw-winking phenomenon. In one there was a light convergent strabismus and light sided partial ptosis, both of which anomalies largely disappeared when the patient smiled. Tenotomy of the internal rectus improved both the strabismus and the ptosis.

A. Lister.

Heterophoria

165. Binocular Pulse: Its Significance in the Symptomatology Diagnosis, and Treatment of Binocular Anomalies.

D. H. H. MARTIN, *Optician*, 113, 30-32, 1947. 4 refs.

The tendency of the eyes to depart from the fixation position is usually estimated clinically when the observer is released from the necessity of binocular fixation, in which case the eyes fall into the passive position in which stresses and strains are eliminated.

A more physiological investigation would detect and measure repressed deviations with the normal functions of binocular vision in operation. Where under binocular

conditions, there exists no tendency to depart from the active or fixation position, the condition is one of perfect binocular poise. The requirements of an apparatus designed to facilitate the clinical ascertainment of binocular poise are analysed. Cards designed by the author are claimed to fulfil these requirements. B. O. A.

166. **The Importance of 'Phoria Measurements in Industrial Vision.** N. C. KEPHART. *Vide abs.* 201.

THE PUPIL AND ITS CENTRAL CONNECTIONS

167. **Report on a Case of Adie's Syndrome Occurring in Association with Syphilis.** (Sur un cas de syndrome de Weill-Reys (alias Adie) associé a des syndromes diencéphaliques, chez une syphilitique.)

A. SUBIRANA and L. OLLER-DAURELLA. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophtal. Published in the *Rev. d'Oto-Neuro-Ophtal.*, 19, 33-35. Jan., 1947. 7 refs.

Case report.

G. I. Scott.

THE HIGHER VISUAL PATHWAYS AND CENTRES

168. **Changes in the Visual Fields confirmed by Pathologic Diagnosis.**

D. J. LYLE, *J. Amer. Med. Assoc.*, 133, 517-522. Feb. 22, 1947.

This paper gives a general account of the different types of changes which may occur in the fields of vision, but contains no new observations. The anatomy of the visual tracts is also described. A brief account is given of a subsequent discussion upon the subject of the paper. A. G. Cross.

169. **Observations of Two Cases of Acute Disseminated Sclerosis with Fatal Termination.** (A propos de la sclérose en plaques. Deux cas a évolution aigue mortelle chez l'adulte.)

M. JEQUIER and P. ZWAHLEN. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophtal., Oct., 1946. Published in *Rev. d'Oto-Neuro-Ophtal.*, 19, 2-6. Jan., 1947.

After describing the clinical course of two fatal cases of acute disseminated sclerosis, the authors put forward the view that heredo-familial endogenous factors play a considerable part in the ætiology of this disease. G. I. Scott.

170. **Hereditary Aplasia of the Optic Nerve in Mice.** (Ueber vererbliche Aplasie des Sehnerven bei der Maus.) H. J. BEIN. *Vide abs.* 207.

171. **Two Cases of Arterio-venous Aneurysm of the Internal Carotid Artery in the Cavernous Sinus.** (Deux cas d'anévrisme artérioveineux de la carotide interne dans le sinus caverneux.)

FRANCESCHETTI, JENTZER, JUNET and DORET. From a meeting of Soc. d'Oto-Neuro-Ophtal. de Genève, Dec., 1944. Published in *Rev. d'Oto-Neuro-Ophtal.*, 19, 53-54. Jan., 1947.

Two cases are reported. In one case ligature of the internal carotid was contra-indicated as digital compression of the artery was

not well-tolerated, but the ocular symptoms largely subsided (in the course of seven months) following intravenous injections of hypertonic glucose solution.

The other case was relieved by ligation of the internal carotid.

G. I. Scott.

172. **Parasellar Mycotic Tumour.** (Tumeur mycosique juxta-sellaire).

P. ZWAHLEN, M. JEQUIER, A. RAYMOND and J. CRAUSAZ. From the thirteenth congress of Soc. Franç. d'Oto-Neuro-Ophthal., Oct., 1946. Published in *Rev. d'Oto-Neuro-Ophthal.*, 19, 5-50. Jan., 1947. 2 figs. 15 refs.

The authors describe the clinical course and post-mortem appearances of a case which recently came under their observation. They point out that the occurrence of such a condition, with no other evidence of fungus infection, is extremely rare, and in such circumstances clinical diagnosis is almost impossible.

G. I. Scott.

173. **Parkes-Weber-Osler-Dimitri Syndrome.**

C. K. BARNES. Chicago Ophthal. Soc. Reported in the *Amer. J. Ophthal.*, 30, 214-215. Feb., 1947.

Case 15: ... interstitial calcification in left ... Radiational ...

A. G. Leigh.

174. **The Dangers of "La Symphonie Pastorale."** (*Les Méfaits de la "Symphonie Pastorale."*). E. R. ... 106, 104-106, Feb., 1947.

Redslob and ... cal case of hysterical blindness occurring in a young girl of 14 as a result of seeing the French film "La Symphonie Pastorale." Those who have seen the film, which has had an international distribution, will remember that it concerns a young congenitally blind wail who was adopted and

emotional young women who are taken to the cinema to see this film, to keep their eyes closed and listen to Beethoven's delightful music.

Stewart Duke-Elder.

OPHTHALMIC ASPECTS OF OTHER CENTRAL NERVOUS DISEASES

175. **Cerebral Thrombo-Angiitis Obliterans.**

L. DAVIS and G. PERRET, *Brit. J. Surg.*, 34, 307-313, Jan., 1947. 6 figs., 21 refs.

The past twenty years have shown that thrombo-angiitis obliterans, though most commonly found in the blood vessels of the extremities, can also affect the vessels of the heart, kidneys, stomach, pancreas, brain, and retina. The cerebral form occurs most commonly between the ages of thirty and fifty years and tends to be chronically progressive, though remissions may occur. The symptoms, which depend

upon the situation of the diseased vessels, include headaches of a migrainous type, paraesthesias, pareses, and such ocular defects as hemianopia, usually homonymous, and diplopia. Details are given of eleven cases, in nine of which osteoplastic craniotomy was performed. The dura was found to be loose, the arachnoid thickened, and many of the smaller arteries were white and obliterated: rarely a similar change was found in the veins. Varying amounts of cortical atrophy were associated. Pathologically, there was endothelial proliferation of the intima and thickening of the subintimal layers of the vessels with thrombi in various stages of organisation. Diagnosis depends upon the long duration of progressive symptoms, the presence of cerebral atrophy in pneumo-encephalograms, and peripheral vascular changes. White obliterated vessels may be seen in the retina, and obliterated cerebral arteries in arteriograms. The condition tends to be misdiagnosed as lues, juvenile arteriosclerosis, hypertension, multiple sclerosis, or intracranial tumour. Thromboangiitis obliterans involves the smaller vessels of the convexity of the cerebral hemispheres, while arteriosclerosis affects the larger basal vessels. Luetic endarteritis, periarteritis nodosa and emboli from endocarditis, are accompanied by a marked inflammatory reaction particularly in the media and adventitia of the vessels. *A. G. Cross.*

176. Post-herpetic Neuralgia.

J. W. McKINNEY. Memphis Soc. Ophthal. Otolary. Reported in the *Amer. J. Ophthal.*, 30, 208-209, Feb., 1947.

Report of a case successfully treated by the local injection of eucupine-procaine with adrenaline. *A. G. Leigh.*

177. Monocular Diplopia. (Diplopie monoculaire.)

C. BALAVOINE. From a meeting of Soc. d'Oto-Neuro-Ophtal. de Genève, Feb., 1945. Published in *Rev. d'Oto-Neuro-Ophtal.*, 19, 59-60. Jan., 1947.

Balavoine discusses the ætiology of monocular diplopia.

G. I. Scott.

OPHTHALMIC ASPECTS OF SYSTEMIC DISEASES

178. Disappearance of a Hypertensive Papilloedema Simulating Intra-cranial Tumour. (Disparition d'une stase papillaire hypertensive pseudo-tumorale.) J. BLUM.
Vide abs. 118.

179. Post-Influenzal Herpetic Keratitis. (Les kératites herpétiques post-grippales.)
M. J. LEGRAND.
Vide abs. 68.

180. Ocular Complications of the Benign Leptospiroses. (Les complications oculaires des leptospiroses bénignes.)

J. BABEL, *Bull. et Mem. de la Soc. Franç. d'Ophtal.*, 59, 292-299.
10 refs.

Comment is made on the ophthalmic complications of the leptospiroses, not only of spirochætosis ictero-hæmorrhagica, but also

of the so-called benign forms such as marsh fever and swincherds' fever, etc., which are becoming increasingly prominent. A severe uveitis appears to be the most common complication. A case of optic neuritis is also mentioned. The prognosis in the benign forms is good but not invariably so. Of considerable importance is the fact that the complications may arise a long time after the original infection, which may have been merely a transient undetermined fever and has been apparently cured and even forgotten. Agglutination tests reveal the cause.

A. Lister.

181. Ocular Complications of Relapsing Fever. (Les complications oculaires de la fièvre récurrente.)

R. NATAF, *Bull. et Mém. Soc. Franç. d'Ophthal.*, 59, 287-291, 1946 (pub. 1947).

Comment is made on the frequency of these complications, the delay in their appearance and the fact that any part of the eye may be affected.

A. Lister.

182. Fundus Finding in Lupus Erythematosus.

J. LANDOSKI, *Amer. J. Ophthal.*, 30, 302, Feb., 1947.

Vide abs. 103.

183. Generalised Sarcoidosis.

M. P. WOOLF. Chicago Ophthal Soc. Reported in the *Amer. J. Ophthal.*, 30, 211, Feb., 1947.

Case report. Infiltration of the lids, subconjunctival tissue, the cornea, and iris. Confirmatory X-rays were obtained from the extremities and chest.

A. G. Leigh.

184. Ocular Changes in the Blood Dyscrasias.

I. S. TASSMAN, *Arch. Ophthal.*, 37, 42-55, Jan., 1947. 4 figs. 13 refs. Discussion.

The author discusses his own cases of ocular diseases in polycythæmia rubra, pernicious and secondary anæmia, different types of leucæmia and Banti's syndrome (splenic anæmia). He mentions (rather surprisingly) Purtscher's angiopathy of the retina in this connection as well as the different types of lymphoma (Hodgkin's disease, lymphosarcoma, lymphoendothelioma and lymphocytic leucæmia).

His case of polycythæmia showed blurred optic discs and a recent superficial hæmorrhage above the left macula. Oedema and hæmorrhage cleared with normal function in two months' time. The hæmorrhages were more abundant in his case of pernicious anæmia. His four cases of leucæmia consisted of two chronic myelogenous, one subacute lymphatic leucæmia and one aleukæmic osteosclerosis. In these, retinal oedema, intra-retinal and subhyaloid hæmorrhages with a yellowish centre are characteristic, but not always present. In his case of Banti's disease with enlarged spleen, cirrhosis of the liver and progressive anæmia papilloedema, greatly distended retinal veins and superficial and deep hæmorrhages were found in both fundi, some with a white centre. There were many small yellowish white foci around the left macula. In the following

discussion Reznikoff mentions the sluggish circulation in polycythæmia conducive to thrombosis, and Aebli two cases of expulsive hæmorrhage after cataract extraction in patients in which polycythæmia vera was discovered after the disastrous operation.

G. Loewenstein.

185. Spasm of Accommodation in the Course of Hodgkin's Disease. (Spasme de l'accommodation au cours d'une maladie de Hodgkin.) DU SEUTRE.
Vide abs. 16.

186. A Pre-menopausal Oculo-palpebral Syndrome. (Edema of the Lids, Chemosis, Ocular Hypertension, Retinal Arterial Hypertension, and Transient Myopia. (Syndrome oculo-palpébral de la pré-ménopause. Œdème palpébral, chemosis, hypertonie oculaire, hypertension artérielle rétinienne, myopie transitoires.)

A. KOUTSEFF. At the June, 1946, meeting of Soc. d'Ophtal. de l'Est, from abstract in *Ann. d'Ocul.*, 180, 62, Jan., 1947.

Two cases are reported. In both there was evidence of disturbance of ovarian and pituitary function including acromegaly, enlargement of the sella turcica, and changes in the visual fields. Treatment with corpus luteum and mammary gland led to reduction of the arterial and intra-ocular tension, enlargement of the visual fields, and relief of the other symptoms.

A. Lister.

187. Macular Lesions due to Endocrine Disease. (Lésions maculaires d'origine endocrinienne.) E. REDSLOB.

Vide abs. 109.

188. Diabetes with Cataract, Retinopathy, and Hæmorrhagic Glaucoma.

B. SPIRO. Chicago Ophthalm. Soc. Reported in the *Amer. J. Ophthalm.*, 30, 215. Feb., 1947.

Case report. The condition was complicated by rubeosis of the iris.

A. G. Leigh.

189. Cataract and the Pituitary Gland. (Cataracte et hypophyse.) J. FRANCOIS.

Vide abs. 130.

190. Vitamin A in Infective Hepatitis.

A. D. HARRIS and T. MOORE. With an addendum on Dark-Adaptation. K. J. W. CRAIK, S. J. MACPHERSON and A. D. HARRIS, *Brit. Med. J.*, 1, 553-559. April 26, 1947. 36 refs.

It is well known that both acute febrile diseases and diseases of the liver affect the metabolism of vitamin A, and since infective hepatitis presents a combination of these lesions the disturbances in vitamin A metabolism will obviously be complex. The authors find that in this disease the mechanisms responsible for the absorption of vitamin A from the intestines, for its deposition in the liver, and for its release into the blood stream are not always affected to the same degree.

The course of dark-adaptation was investigated by means of the Craik adaptometer in patients with infective hepatitis. The mean final rod threshold for 37 men tested within one week of admission to hospital was significantly impaired in comparison with that of 20 normal adults of comparable age. In 14 men retested after an interval of one month or more the mean final rod threshold was significantly improved. No alteration was apparent in cone

threshold, and the rod-cone transition time was only slightly prolonged. The authors conclude that dark-adaptation under the conditions of this experiment was a less sensitive measure of vitamin abnormality than chemical estimation of plasma vitamin A. There was, for example, no diagnostic impairment in individual patients, and statistical analysis was necessary to show the effect, whereas using chemical estimation of the plasma vitamin A as an index a definitely abnormal result was obtained in most patients. The insensitivity in measurement of dark-adaptation arises from two factors: the range of normal variation from individual to individual and the wide margin of error in the same individual found by repeated testing on the same day.

Stewart Duke-Elder.

191. Tropical Nutritional Amblyopia.

H. M. DEKKING, *Ophthalmologica*, 113, 5-92. Feb., 1947. 35 refs. 9 figs.

A form of chronic amblyopia accompanied by central or paracentral scotomata, known by the Dutch as "camp eyes" developed in most of the P.O.W. camps controlled by the Japanese in S.E. Asia. It was confined to the camps in S.E. Asia and did not occur in camps in Japan itself, nor did it occur at all in Europe.

The author sees no reason to label the disease a "retrobulbar neuritis" and believes that the main changes were in the retina itself, for retinal changes are often found early in the disease, and in old cases there are minute macular lesions in 20% of patients. The scotomata are small and scattered and only rarely central, and it is difficult to see how such small and scattered scotomata can be due to a lesion in the optic nerve. The author believes the blind spots to be due to small hæmorrhages and thromboses of the retinal vessels and thinks that the papillo-macular bundle defect may be a secondary change. He never found an appreciable atrophy of the optic disc and in this is widely at variance with other workers on the same subject.

The incidence of "Camp eye" (according to the author) depends very much upon the colour of the eyes involved, for brown eyes are rarely affected, most of the patients having blue or grey irides. Nyctalopia was also a marked symptom.

Clinical features. The disease only affects adults, nearly all patients in this series being between 25 and 50 years old; men were affected much more than women, and in some women's camps it did not occur at all.

The onset may be sudden but in most cases the disease develops slowly over some weeks or months. In the early stages recovery can occur after a change in diet, but the older the case the less its

course can be influenced by any ameliorative measures.

The patient finds that he can see much better in the dusk than in bright light and avoids the sun as much as possible.

Field changes. There is never any peripheral constriction and the blind spot is usually normal. The most characteristic features are the scotomata which may be central, but are usually paracentral and of varying forms ; sometimes a ring scotoma is found. The author has never seen a direct connection between the scotoma and the blind spot.

Other symptoms. Burning of the feet and legs usually accompanied the eye changes, and sometimes the hands and face were affected also. This the author attributes to a neurovascular lesion, and he sums up the fully developed camp eye syndrome as consisting of 3 symptoms—scotoma, neurovascular changes and nyctalopia. Of 32 patients who had all these symptoms only 5 had dark eyes.

Opinion is very divided on the frequency of retinal changes in fresh cases, some saying that retinal hæmorrhages and swollen discs were often seen and others that they were rare. Of the late changes the author has found slight abnormalities of the macula in 20% but no vascular abnormalities. He finds it difficult to support the common finding of "slight atrophy of the optic disc" bearing in mind the wide limits of what constitutes a normal disc appearance.

Diagnosis depends upon the fact that the patient has lived in a S.E. Asian concentration camp and by exclusion of other diseases which could give a similar picture such as senile macular changes, multiple sclerosis, optic neuritis, etc.

Prognosis. The author has not found any improvement in any of his patients even under the best conditions. There is no adequate treatment once the disease is more than a few months old.

Ætiology. For every agent that may be suggested as a possible cause the author has found a case which denies that possibility. He discusses the following ætiological agents :—

1. Climate. 2. Infection. 3. Light. 4. Intoxication.
5. Mental factors. 6. Dietary deficiency. 7. Combinations of these.

Climate. "Camp eyes" arose in prisoners in such varied climates that it does not appear that this can be a contributory factor, and all the evidence is against an infective factor, but there seems little doubt that strong light is of importance in the ætiology of the disease. It almost exclusively occurs in persons of blue eyes and fair skin, in other words those whose retinae are poorly protected against strong illumination. Many patients showed the first signs of the disease immediately after prolonged exposure to strong light, and finally, the P.O.Ws. in European camps where the light is less

intense, escaped the disease. On the other hand a few prisoners developed it who lived in sheds and did not work in the sun.

Intoxication. Many poisons are known which have a specific affinity for the papillo-macular fibres, and some tropical plants contain these poisons. Some species of poisonous vetches are found in Java and dimness of vision has been reported after eating them. The author believes that some seeds of these poisonous plants may have occurred as a contamination in the rice and mixed vegetables from which the daily soup was made.

Tobacco. The commonest toxic substance causing eye symptoms is tobacco and besides a centrocoecal scotoma, nyctalopia is one of the commonest symptoms of tobacco poisoning. Thus it is alluring to regard "camp eyes" simply as a tobacco amblyopia aggravated by malnutrition, but there are some objections to this, for the smoking material was almost exclusively cigarettes, from which tobacco amblyopia has not yet been reported, and moreover, some patients with "camp eyes" never smoked at all.

Mental factors. Heavy mental strain caused an exacerbation of eye symptoms, which disappeared in some cases when things became quieter. It seems possible that a prolonged state of anxiety may cause changes in the blood vessels of the eye just as it does elsewhere in the body.

Deficiencies. Camp diet was deficient in all vitamins, as well as proteins and fat. It does not appear that vitamin A deficiency was the direct cause of the eye symptoms for some prisoners developed "camp eyes" while on a diet containing eggs, cod liver oil, etc. Keratomalacia did not occur and the author did not see xerophthalmia or Bitôt's spots. Thiamin deficiency has been named as the cause of "camp eyes," and one notes that in Japan itself, where "camp eyes" did not occur, one third of the rice ration was replaced by millet, which is an excellent source of thiamin. On the other hand, most patients with "camp eyes" did not suffer from beri-beri, and many authors on beri-beri do not mention eye signs, but Elliot in his book on tropical ophthalmology devotes a whole chapter to the association of beri-beri with central scotomata. There seems to be no doubt that thiamin deficiency can cause damage to the optic nerve and retina, but clearly other contributory factors are also involved.

The author did not find any evidence of riboflavine deficiency in any of his patients, nor was there any marked association with pellagra, only two or three patients having this disease at the time that they developed eye symptoms. Real scurvy did not occur in the camps.

The author concludes that an explanation of "camp eyes" is only possible by assuming a combination of several factors mentioned

above—for instance deficiency and intoxication. Part of the function of vitamins A and B is detoxication of harmful substances in the food. It is possible that in the devitaminised state small doses of tobacco, or of food containing one of the vegetable poisons mentioned, acquired toxic properties. On a retina so damaged, strong light may have a deleterious effect.

“Camp eyes” may thus be considered to be an intoxication of the vascular and nervous elements of the retina with the intense tropical sunlight as an aggravating factor.

Seymour Philips.

192. **Malnutrition in Indian Prisoners-of-War in the Far East.** J. H. WALTERS, R. J. ROSSITER and H. LEHMANN. *Lancet*, 252, 205-210. Feb. 8, 1947. 34 refs.

Of 2,000 Indian prisoners-of-war, it was found on release that about 9 per cent. suffered from “captivity amblyopia.” The commonest finding was bilateral temporal pallor of the disc, and in some cases there was total pallor. In other cases a gross enlargement of the physiological cup was observed. Perimetry showed a marked concentric contraction of the visual fields, which is in sharp contrast with the findings of other observers, and central scotoma was only demonstrated in one case.

The authors stress the fact that these results must be interpreted with caution as the arrangements for ophthalmic examination were inadequate, the patients illiterate and very unfavourable subjects on which to perform a delicate subjective test.

[These findings must be interpreted in the light of the authors’ apparent limited knowledge of what constitutes a normal fundus.]

Seymour Philips.

193. **Pellagrous Encephalopathy.**

PHILIP R. GRAVES, *Brit. Med. J.*, 253-256, Feb. 15, 1947. 5 refs.

In 63 cases of vitamin B deficiency occurring in prisoners-of-war in Singapore, the author found widespread disorders of cerebral functions; as recovery occurred spastic paraplegia was the common residual state. 46 per cent. of the cases had loss of visual acuity due to retrobulbar neuropathy, and 5 per cent. diplopia due to oculomotor palsies. The author claims to have produced sufficient evidence to include the condition among the manifestations of vitamin B deficiency and as part of the pellagra symptom complex. A clear-cut syndrome as reported here appears to be unique.

Seymour Philips.

194. **Camp Amblyopia.**

SIE-BOEN-LIAN., *Ophthalmologica* 113, 38-44, Jan., 1947. Refs.

During the Japanese occupation of Java, the author was confronted with a certain eye condition he had not met before. Inability

to read because of blurred vision or bad sight was a symptom, and on examination patients were found to have diminished central visual acuity and central scotomas, relative or absolute.

Nothing abnormal was noted in general health, but in a few cases small striae caused by retinal haemorrhages were seen. These cleared up slowly. All the signs except this latter were suggestive of retrobulbar neuritis (camp amblyopia).

The author refers to several articles written by various doctors working in prison camps in Java, Malaya, Siam and Burma and discusses their suggestions as to the cause of this complaint.

There follows detailed reports on 5 cases and in all these vision became normal after treatment with thiamin.

The author's conclusion is that this condition is due mainly, though not exclusively, to vitamin B deficiency. A number of additional factors may be responsible such as a disturbance in the balance of the vitamins and perhaps of salts and albumen. Small quantities of tobacco and alcohol may be harmful factors.

Special mention is made of the appearance of retinal haemorrhages in some cases. He considers that these are not due to vitamin B deficiency but probably to lack of nicotinic acid. In spite of the value of thiamin in the treatment of this condition, it is suggested that other vitamins as well as B may be lacking.

Seymour Philips.

195. Postneuritic Optic Atrophy in Repatriated Prisoners of War. W. L. ROBERTS and T. H. WILLCOCKSON. *Amer. J. Ophthalm.*, 30, 165-169. Feb., 1947.

After a brief review of the literature of the past decade concerning nutritional diseases associated with failure of vision, the authors present six typical cases representative of the terminal effects of nutritional neuropathy in repatriated prisoners of war. The findings were similar to those described by other observers and the permanence of the visual loss is emphasised.

A. G. Leigh.

196. Deficiency Diseases in Re-occupied Hong Kong. L. FEHLY, *Brit. Med. J.*, 220-222, Feb. 8, 1947. 3 refs.

On the re-occupation of Hong Kong the author found signs of vitamin B deficiency in many of the children, conjunctivitis and photophobia being the common signs. Both conditions disappeared after a few days on riboflavine and marmite. A different form of conjunctival lesion appeared in children suffering from vitamin C deficiency. The palpebral conjunctiva was thickened and hyperaemic and resembled the condition of the gums in scurvy. There was no lacrimation or photophobia.

Seymour Philips.

above—for instance deficiency and intoxication. Part of the function of vitamins A and B is detoxication of harmful substances in the food. It is possible that in the devitaminised state small doses of tobacco, or of food containing one of the vegetable poisons mentioned, acquired toxic properties. On a retina so damaged, strong light may have a deleterious effect.

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parents because they were not seeing well.

On examination, vision was not improved with glasses. The optic disc appeared normal in the early stages but at a later stage temporal pallor was seen. Treatment consisted mainly of cod liver oil plus good diet with plenty of vitamin B for approximately 4½ months. Recurrences were only seen in those who discontinued their treatment.

On ophthalmological examination the visual acuity varied from 20/40 to 20/200. The discs showed marked temporal pallor in the later stages of the disease. The visual fields in 6 out of 12 children showed definite central or centro-caecal scotomas, usually small. The peripheral fields were normal. 10 per cent. of the children had partial eighth nerve deafness, and skin or mucous membrane changes considered characteristic of vitamin B deficiency were noted.

Of 72 patients, 42 were cured or definitely improved, the remainder showed slight or no improvement. In Kingston, brewers' yeast was considered the best treatment.

A case is reported of a man, aged 24, who had lived in Jamaica all his life; at the age of 11 years he noticed blurred vision and decreased hearing, and the condition had remained constant for 13 years. The usual signs of retrobulbar neuritis were present.

The retrobulbar neuritis found in children in Jamaica closely resembled that seen amongst repatriated prisoners of war from Japan. Most of them developed multiple deficiency diseases—pellagra, wet and dry beri-beri—and it was then that the decreased vision was noticed. A typical history of an American soldier captured in 1942 is described and also the case of a clergyman in captivity who developed amoebic dysentery and beri-beri, during which time his vision decreased markedly. Of 110 prisoners, 12 had had similar symptoms.

The author's conclusion is that the disease is not hereditary, and tests have excluded syphilis as a cause. Improvement depends on the patient's diet, but it is impossible at present to state exactly which factors produced the loss of vision.

Seymour Philips.

199. Combinations of Phakomatoses. Neurofibromatosis (Von Recklinghausen's Disease) Occurring in Association with a Cutaneous Haemangioma of the Naso-Frontal Region. (Association de phakomatoses. A propos d'un cas de neurofibromatose de Recklinghausen avec hémangiome cutané naso-frontal.)
M. E. B. STREIFF. *Vide abs.* 119.

SOCIAL, HYGIENIC, GEOGRAPHICAL AND STATISTICAL OPHTHALMOLOGY

200. Ophthalmia in Cyprus. (Two Historical Notices.)
I. E. SHELLEY, *Acta Med. Orient.*, 6, 20-21. Jan., 1947.

This is a short note of two accounts of ophthalmia in Cyprus by two travellers, one, J. Locke in 1553 and the other, Elias Pesaro in 1563. The severe and widespread disease described seems to have been acute conjunctivitis of the Koch-Weeks' type.

Stewart Duke-Elder.

scattering according to Rayleigh. For over a region within 200 miles of Washington, D.C., it was concluded that the attenuation and scattering of the "clear" air above 10,000 feet was about 35% above that of theoretically pure air.

B. O. A.

COMPARATIVE OPHTHALMOLOGY

207. **Hereditary Aplasia of the Optic Nerve in Mice** (Ueber vererbliche Aplasie des Sehnerven bei der Maus).

HUGO J. BEIN, *Ophthalmologica*, 113, 12-36. Jan., 1947. 66 refs.

Since June, 1938, a stock of waltzing mice known as the Basle Waltzing Mouse Stock, has been observed and bred. These animals differ from all hitherto described; they move in regular turning movements without any choreic or athetotic additional movements. In 1942 the author, while making routine anatomical preparations, found one of these mice with bilateral aplasia of the optic nerves. On this accidental finding the whole stock was examined ophthalmoscopically and it was found that some animals had hypoplasia or aplasia of the optic nerve or of the entire visual pathway, most of them without macroscopic change, one with complete aplasia of one eyeball (not even a rudiment could be found in the orbit) and a few with skeletal changes such as flexed tail. On further breeding the condition turned out to be an autosomal polymer recessive. The mice did not show any difference in vitality, behaviour or movement from the others.

Anatomical investigations were undertaken in a number of the affected animals. The brain was removed under deep ether anesthesia; 70% alcohol fixation was used for cellular staining; 10% formol for marrow sheath staining, and serial sections of 10 μ were made throughout the brain.

Five varieties of defect were found: (1) unilateral hypoplasia, (2) unilateral aplasia, (3) unilateral hypoplasia with contralateral aplasia, (4) bilateral hypoplasia and (5) bilateral aplasia of the optic nerve. The varieties were subject to sub-varieties; some showed the defect confined to the nerve but in others it could be traced through the whole visual path including the area striata.

Any connection between waltzing movement and optic nerve aplasia was excluded by performing bilateral enucleation on normal mice; it was found that removal of both eyes did not interfere with the movements of the animals.

The author points out that all similar conditions hitherto described were accompanied by gross under-development of the central nervous system, and even of one half of the body; such animals did not survive. Those of the Basle Stock were not only fully viable, but also capable of reproduction.

A survey of previous literature and a list of references is added.

George C. Laszlo.

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Review

CONTACT LENSES

by

A. G. CROSS,
LONDON

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Historical.

THE theory of the contact lens was conceived in the early days of the nineteenth century (Young, 1801) but almost a hundred years passed before the practical application became possible. Saemische, in co-operation with Müller of Wiesbaden, was responsible for fitting the first wearable contact lens in 1887. This lens was the work of a glassblower, but only a short time elapsed before the production of ground contact lenses, and for a period of nearly fifty years the blown and the ground types fluctuated in relative popularity. In 1933 Josef Dallos, working in Budapest, published the details of the method which he had devised for taking a mould from the human cornea and preparing a corresponding lens. This represented a most striking advance, and a great increase in the

number of people wearing contact lenses and in the time during which they could be tolerated was the direct result. The history of the development of contact lenses has been reviewed by Dallos (1936), Bruce (1937), Haas (1937), Mann (1938), Town (1938), Mann (1939), Mihalyhegyi (1940), Jaensch (1942), Sverdllick (1942), Strebel (1943), Darcy Williams (1946), Pascal (1947), and others.

Types of Contact Lenses.

Moulded Lenses.—The moulded type of lens which originated with the work of Dallos has been widely used since his original communication, but many modifications of his method have been employed. Dallos took a mould of the globe in negacoll, which is stored as a powder and prepared by adding water and warming. He cooled it to 40°C. before use and applied it to the eye in an approximately fitting shell. A positive mould was prepared from this in a wax called hominit, a negative in plaster of Paris and a positive in plaster of Paris. The lens was manufactured from this plaster positive. Difficulty has occurred in obtaining a completely satisfactory material with which to mould the globe. The necessary qualities of such a substance are ease of preparation, absence of any irritating quality to the eye, a constant and fairly rapid setting time, and elasticity combined with the ability to maintain its shape during removal from the eye. Bruce (1937) used negacoll, but he poured it directly on to the cornea while the lids were kept open with a speculum. Mihalyhegyi (1941) employed a short tube with an outward curving rim for pouring negacoll on the eye. This caused the material to spread over the eye evenly from one side and prevented the penetration of air between the eye and the mould and he found that this method gave better results than the application of the hydrocolloid in perforated metal moulds. Obrig (1938) employed negacoll in a specially designed shell with a movable handle. This enabled removal from the eye to be carried out with less distortion of the mould. Town (1940) considered that a more rigid substance gave better results in moulding the sclera, and he employed dental wax, using negacoll for the corneal portion. Maisler (1939) reported the use of Kerr's hydrocolloid which is workable at 100–104°F. and sets in one minute or less, about half the time required by negacoll. He used a silver shell for the application of this material to the eye. In 1943 Obrig described the use of moldite as an impression material. This substance, stored in powder form, is a gelling agent which reacts with distilled water, and is, therefore, easier to prepare than negacoll. The gelling process takes a fairly constant time of about 30 seconds, but can be hastened by the use of warm water. Obrig employed plastic shells with small perforations for the application of moldite to the globe, and found this substance to be entirely non-irritant. Graham

(1947) using moldite took moulds of the globe without the use of surface anæsthesia. Sugar (1943) reviewed the various preparations employed in taking moulds and condemned negacoll and dental wax for lack of elasticity. He advised the use of coe-loid powder, a compound of algin, calcium sulphate and "filler." It is prepared by dissolving in water, and spatulating for two minutes. It sets in a constant time which can be varied by change of temperature. Boshoff (1943) advised the use of zelex which is mixed by dissolving in water at 103–105°F. and which sets rapidly. Darcy Williams (1945) pointed out that the taking of an impression of the cornea with negacoll or moldite was unsatisfactory because some movement of the eye occurred before setting and this tended to cause inaccuracies, and also because the shell or container of the moulding material tended to cause distortion. He reported satisfactory results from moulds prepared by spraying wax on to the cornea at a temperature between 120°F. and 130°F. and found that no damage was caused to the globe. He exposed the eye by means of a speculum and made the impression in two parts: the first of the upper part of the eye, with the patient looking down and the second of the lower part while the patient directed his gaze upwards. A composite model was prepared from these moulds in the laboratory. The fixation of the eye while making impressions has presented an ever recurring problem which fitters have solved by various methods. Chisholm (1940) devised a special marker, which the patient could fix with his other eye, or, in cases of unilateral blindness, grasp with his hand. General descriptions of moulding methods have been given by Maude (1938), Obrig (1938), Beacher (1944), Dickinson and Clifford Hall (1946), and others.

Ground spherical lenses and their modifications.—Spherical lenses have been made by the Zeiss Company for many years. They are fitted from a fitting set, and have been worn by some persons with great benefit. They have caused great discomfort in others, however, due to the fact that they have a corneal diameter of 12 mms., while the corneal diameter of the average person is over 13 mms. (Obrig, 1938), and that, in over two-thirds of the population, the sclera is not spherical and is not suitably fitted by these lenses (Eggers, 1939). Asymmetry of the sclera is more marked when corneal scarring is present (Mihalyhegyi, 1941). Zeiss lenses have not been obtainable in England since the outbreak of the recent war but Strebel (1937) favoured them and Sattler (1938) thought them preferable to those of Müller-Welt, Müller, and Dallos. Eggers (1939) also advised the use of Zeiss lenses and published formulæ for working out the correct fitting. These varied according to whether the patient was myopic or hypermetropic and were based upon the amount of refractive error. The radius of the corneal

portion was calculated, while the scleral fitting was carried out according to the usual principles. Zeiss lenses were also used by McKie Reid (1938). Appreciation of the fact that the sclera was not spherical resulted in modifications which attempted to obtain a more exact fit. Eggers (1939) stated that the anterior sclera was paraboloid in shape and calculated suitable shapes for stock paraboloid lenses. Feinbloom (1941) developed the Toric series which provided differences between the vertical and horizontal scleral radii, of such small degree that a glove fitting could be obtained. Müller-Welt stamped contact lenses have an aspherical form and can often be worn by persons in whom Zeiss lenses cause discomfort (Strebel 1943). Ridley (1946) described contact lenses cut on a lathe from a solid block of the plastic known as transpex. These lenses could be prepared to any corneal or overall diameter, in circular or oval shape, and could be decentred to any required amount along any axis. He stated that about three-quarters of all cases suitable for contact lenses could satisfactorily be fitted with them.

All spherical contact lenses and the types which have been derived from them possess the great advantage over the moulded type that the fitting process can be carried out rapidly and that the correct lens can be worn for a trial period before it is ordered. It is possible that tolerance is not so great as that obtained by the more elaborate methods, but many people desire to wear their contact lenses for short periods separated by considerable intervals, and, for them, this type of lens has many advantages.

Conical Lenses.—Feinbloom (1945) pointed out that the fundamental principle of contact lens fitting, which was the reduction of the pressure of the lens upon the eye to a minimum, was not satisfied either by moulded lenses, Zeiss lenses or Toric lenses (Feinbloom 1940). Investigation had shown him that the ideal shape for the scleral portion of a contact lens was conical, the angle of the cone being arranged so that the inner surface of the lens was tangential to the sclera at the area of contact. Movement of the eye might change the zone of contact but the tangent touch was maintained. This type of lens had a small bearing area which was constantly changed as the eyes moved. He introduced a series of lenses the corneal portion of which was spherical and the scleral part conical, having a flange on the temporal side to prevent the lids striking the edge of the cone. Fitting required a set of only twenty lenses, and his organization supplied the finished lens with appropriate correction in about one week. Pascal (1947) formulated the principle that the smaller the bearing area the greater the comfort and suggested that a conical scleral portion was the ideal shape.

Blown Lenses.—The firm of Müller of Wiesbaden have produced blown glasses for many years. These are afocal and are fitted by

a process of trial and error, and as many as 60 or 70 lenses may have to be blown before one is found which is both a suitable fit and an adequate correction of the refractive error. It cannot be denied that they are more comfortable, in many cases, than the Zeiss lenses (Clausen 1929, Sattler 1938), but the protracted method of fitting has caused a diminution of popularity since the introduction of moulding methods. The firm of Müller-Welt of Stuttgart introduced a new development of blown glasses in 1935, when, at the meeting of the Society of Oculists at Württemberg they demonstrated a blown lens the corneal portion of which had been ground as a lens of known power. The technical problem of grinding a lens on a blown glass had previously been considered insurmountable. General descriptions of the various types of contact lenses are given by many writers (Sattler, 1938 ; Dallos, 1938 ; Merigot de Treigny, 1938 ; Mann, 1939 ; Mihalyhegyi, 1940 ; Jaensch, 1942 ; Gokhale, 1942 ; Obrig, 1942 ; Darey Williams, 1946 ; and others).

Plastic Contact Lenses.

Zeiss contact lenses, Müller blown contact lenses and the first moulded contact lenses were made in glass, but in the past ten years this substance has been increasingly replaced by plastic materials. Plastics are lighter than glass and are to some extent flexible (Gyorffy, 1940; Jaensch, 1942). They are unaffected by tears and also by such organic solvents as ether, acetone, and chloroform (Lawson, 1947) but are stained white by lysol. They have a high light transmission, though this tends to diminish after they have been exposed for long periods to bright sunshine, and in all respects their optical qualities may be considered equal to the highest quality glass. They are almost unbreakable, though more easily scratched than glass. Feinbloom (1937) described a contact lens which was the result of nearly seven years research, and which combined a moulded scleral portion of plastic and corneal portion of optical glass. This was a great advance but was not entirely satisfactory and it was left to Obrig to progress further. He had enthusiastically adopted Dallos' principle of the moulded lens and was responsible for measuring large numbers of moulds and establishing the fact that the corneal diameter was usually larger than the 12 mm. which had always been the standard diameter of the Zeiss lenses. His first moulds were sent to the Zeiss factory for manufacture of the lens in glass, but in 1938 he began to undertake the preparation of his own contact lenses and produced a type composed entirely of plastic. This has been improved and has become a standard model (Obrig, 1944). The Toric series (Feinbloom, 1940), the Müller-Welt stamped type (Strebel, 1943) and the Tangent Cone (Feinbloom, 1945) are produced in plastic materials, as are the lenses described by Ridley (1946) which are cut from blocks of transpex. Plastic lenses are also described by other workers (Gyorffy, 1940 ; Salvatori and Oriani, 1943 ; Gyorffy, 1944 ; Moray Girling, 1944).

Fitting.

The general principles of fitting are well established. These apply equally to spherical and to moulded lenses because the latter usually require some amount of grinding in order to render the fit perfect. Experienced workers frequently omit the moulding process and, selecting from stock a lens of approximate size, grind it to the exact fitting required (Mann, 1938). Areas of excessive pressure, indicated by blanching of the conjunctival vessels, must be removed and areas of deficient scleral contact must be filled in order to give contact over as large an area of sclera as possible (Dallos, 1933; Jaensch, 1942). Opinions vary regarding the effect of contact between the lens and the centre of the cornea, but all authorities agree that adequate clearance of the limbus must be allowed if a comfortable fit is to be achieved. The corneal microscope can be useful in assessing zones of touch and the use of fluorescein and cobalt blue light is of the greatest help in estimating an exact fit (Wies, 1941, but see Darcy Williams, 1946). Fitting methods have been described by Salvatori and Oriani (1943), Beacher (1944), Dickinson and Clifford Hall (1946), and others. Dallos (1947) in a paper read to the Contact Lens Society classified the different methods of fitting contact lenses into a series of stages. He regarded the regular type of spherical contact lens with a circular rim as the basic first stage. The extension of the fitting rim from the small primary sectors to an even capturing line was the second stage and the extension of this line to a wider strip the third stage. Full scleral surface fitting was the fourth while the fifth stage, representing a considerable deviation from the other four, included the cornea as well as the conjunctiva in the fitting area. No fluid was required for lenses of this latter fitting though some tear circulation over the cornea was permitted. It was pointed out that different available types of contact lenses corresponded to these different stages and according to the regularity of their sclerae, certain persons could be made comfortable with fittings of the earlier stages. Fitting of these earlier stages was not such a skilled task, and could be satisfactorily carried out by less experienced workers.

Optical properties and applications.

The theoretical optics of contact lenses have been worked out very completely by Hartinger (1930) and summarized by Gualdi (1931), who listed the optical advantages of contact lenses: 1. Contact lenses correct corneal astigmatism. 2. There is no prismatic effect. 3. There is no change of the visual angle or displacement of the apparent point of rotation of the eye, as occurs with spectacles. 4. The difference between the internal force of accommodation and its external result disappears. 5. The retinal image is larger in myopes when they wear contact lenses. - 6. A full field of vision is

obtained. 7. Asymmetrical errors like keratoconus can be corrected. Bocder (1938) published formulæ showing the optical properties of contact lenses and compared the size of the images when ametropic eyes were corrected by them. Pascal (1939) pointed out that the contact lens is always a deep meniscus, and, in spite of this, may be plano in effect. The power of a contact lens with fixed radii for anterior and posterior surfaces can be changed by varying the thickness of the lens, and any effect from concavity to convexity can be produced. Strcbel (1943) reviewed methods of calculating the geometrical form of the tactile surface of the eye. He disagreed with Helmholtz's conception that a three axial ellipsoid most nearly represents the corneal shape, and considered that only a four axial ellipsoid, were it possible, would be an exact representation. He concluded that the practice of taking impressions from the living eye, in conjunction with photographic enlargements of the moulds, had advanced beyond all theoretical considerations.

Modern contact lenses having a good scleral fit always take up the same position in the eye, and a correcting cylinder can be ground upon the posterior aspect of the corneal portion to overcome non-corneal astigmatism. The cylinder must be 2.5 times as great as that required to cause similar correction in spectacles because the difference in refractive index of saline and glass is less than that of glass and air (Williamson-Noble, Dallos, and Mann, 1940).

The fluid lens between the contact lens and the eye forms a new refracting surface. This, theoretically, does not entirely abolish the effect of irregularities of the anterior corneal surface because the refractive indices of the fluid and the cornea are not absolutely similar. The fluid used while fitting should be similar to that with which the glass will be worn (Braff, 1946). Many eyes show no astigmatism by retinoscopy or when examined subjectively, but have up to 0.75 D of corneal astigmatism when examined on the keratometer. It appears that the corneal astigmatism is, ordinarily, compensated by lenticular astigmatism and this can be confirmed by refraction with a contact lens in position (Ridley, 1946). A similar relationship between accommodation and convergence is present when contact lenses are worn as when ordinary spectacles are used, but there are no prismatic effects as the eyes look through the absolute centre of the lenses the whole time (Beacher, 1943).

Indications.

Optical.—Asymmetrical ametropia has been an indication for contact lenses since the earliest days of their use, and cases of keratoconus have always derived great benefit from wearing them (Fich, 1888; Kalt, 1888; Strebel, 1937; Merigot de Treigny, 1938; Terrin, 1939; Gyorfy, 1940; Sverlich, 1942; Jaensch, 1942; Strebel, 1943). This is almost entirely an optical result but the

orthopaedic effect of pressure of the lens upon the apex of the corneal cone may be considered beneficial (Strebel, 1937 ; Mihalyhegyi, 1940; Strebel, 1943). Contact lenses are beneficial in cases of keratoconus even after extraction of the lens (Neill, 1946). Unilateral aphakia may benefit from the use of a contact lens because the image of the aphakic eye is so reduced, compared to that when ordinary spectacles are worn, that binocular vision can be attained (Williamson-Noble, 1938 ; Mann, 1938 ; Town, 1938 ; Gyorffy, 1940 ; Jaensch, 1942 ; Neill, 1946 ; Mann, 1947). Surface irregularities of the cornea derive great visual improvement by wearing contact lenses, and the most important condition in this group in recent years has been delayed degenerative conditions of the cornea following exposure of the eyes to mustard gas. This has resulted from gas attacks during the First World War in 1917 and 1918. It has not occurred in cases where eye symptoms immediately after the gassing lasted less than eight weeks (Mann, 1944) and there has always been a latent period of 6-20 years between the exposure to mustard gas and the onset of the so-called mustard gas keratitis. The cornea is insensitive and recurrent ulceration occurs. Contact lenses improve the vision and retard ulceration and scarring of the cornea (Moore, 1929 ; Ridley, 1936 ; Phillips, 1939 ; Mann, 1944). Defective vision due to scarring of the cornea from any cause can often be improved by contact lenses (Phillips, 1939 ; Mihalyhegyi, 1940 ; Strebel, 1943). Myopia is one of the commonest conditions for which contact lenses are ordered and the visual results in the higher degrees are excellent (Mann, 1938 ; Williamson-Noble, 1938 ; Phillips, 1939 ; Gyorffy, 1940 ; Sverdlisch, 1942 ; Mann, 1947). The contact lens may, in addition, cause the shortening of the longitudinal axis of the globe as the result of pressure upon the cornea (Mihalyhegyi, 1940). Contact lenses were used by some myopic pilots during the late war to give themselves full visual acuity. Few of these cases have been reported in the literature but Briggs (1947) describes one such man, a moderate myope, who was fitted with contact lenses. He passed into the Royal Air Force as a pilot, underwent flying training, and carried out several operational sorties with Bomber Command, without the lenses being detected. He had eventually to bale out over enemy-occupied Europe, but contrived to escape through Spain, and he completed a tour as a pilot in Transport Command before his demobilization. He kept the secret of his contact lenses from his flying colleagues and even from his wife until his service ended. Bubbles tend to form in the fluid lens at high altitudes with visual embarrassment (Jaekle, 1944), but contact lenses may be a great help to flying personnel. Aniridia whether congenital or traumatic is a condition in which contact lenses are useful. Most of the corneal portion of the lens must be opaque and only a small aperture left for vision, or the whole lens

must be tinted (McKie Reid, 1938 ; Strebel, 1943 ; Kazdan, 1944). Contact lenses in tinted glass may be useful in albinism (Asher, 1930; Strebel, 1943). The effect of telescopic lenses can be obtained by wearing a contact lens of high myopic type and a hypermetropic correction in spectacles (Dallos, 1936; Sattler, 1938; Bettman and McNair, 1939). A contact lens with a flat anterior surface has a power of $-44D$, and if combined with a $+29D$ convex lens in spectacles a magnification of 1.6 times is achieved. This method makes the apparatus less ponderous than the ordinary telescopic spectacle.

Occupational.—Contact lenses are useful in work where spectacles are not allowed, or in occupations where they are a disadvantage as in those involving exposure to rain, steam or mist. Concert artists, actors, and actresses find them a great advantage (Mihalyhogyi, 1940). Film actors and actresses employ contact lenses as an aid to make-up. The colour of the eyes can be changed, while squints and the changes of age can be produced. A recent film based upon Charlotte Bronte's novel, *Jane Eyre*, showed the scarred cornea of the blind Mr. Rochester, an effect produced by the use of contact lenses (Greenspoon, 1944).

Cosmetic.—Many people are self-conscious about wearing spectacles, and for them contact glasses are useful. This is more important if there is some other reason besides the visual one for wearing the correction. Contact lenses may therefore be useful when a squint is present and the patient objects to spectacles (Goldberg, 1941). A contact lens upon which an artificial eye is painted can be used to overcome the disfigurement of a shrunken eye which the patient does not wish to have removed (Mukerjee, 1938).

Therapeutic.—Contact lenses may be used to protect the cornea in neuroparalytic keratitis, and one reported case in which the lens was broken showed rapid return of inflammation. Great care is necessary in the fitting of these cases (Sattler, 1938; Klein, 1943). They are also useful in the treatment of certain malformations of the lids such as entropion and trichiasis (Strebel, 1943). Contact lenses are often employed in pemphigus and paroline may be used as the lens fluid. Mucous grafts to the fornices have been required before the lenses can be inserted, but once fitted great benefit results (Whiting, 1937 ; Phillips, 1939 ; Jaensch, 1942 ; Strebel, 1943.) Irradiated ergosterol diluted in almond oil has been used as the lens fluid in keratoconus with satisfactory decrease of the deformity (Strebel, 1937).

Diagnosis.—Contact lenses are used diagnostically in gonioscopy. The original gonioscopy lenses were of glass, but subsequently they have been made in plastic (Gradle, 1938). The original models have

been modified by the incorporation of a detachable handle to aid manipulation (Barkan, 1940) and by the drilling of two holes in the centre (Friedman, 1941). This latter modification is useful when bubbles accumulate beneath the lens. Fluid can be injected through one hole and air escapes through the other. Contact lenses with an incorporated opaque limbal ring were used during the late war to assist in the localization of opaque foreign bodies when more exact instruments were not available. The indications for contact lenses have been listed by Mann (1938), Williamson-Noble (1938), Dickinson and Clifford Hall (1946), Treissman and Plaice (1946), Cross (1947), and others.

Tolerance.

This may be considered under headings of chemical, physical and psychological tolerance (Erggelet, 1930). Sattler's veil requires separate description.

Chemical Tolerance.—This concerns the solution with which the glass is inserted, and some authorities have found great differences in the comfort obtained, according to the fluid used. 0.85% sodium chloride is most commonly employed (Mann, 1938), but the use of 2% grape sugar (Fich, 1888), Ringer's solution (Mann, 1938), Tyrode's solution (Mann, 1938), sodium chloride buffered with sodium bicarbonate (Town, 1940), various strengths of sodium bicarbonate (Dickinson and Clifford Hall, 1946), and many others have been reported. Many lenses which do not fit tightly fail to retain the liquid in which they are inserted for more than a few minutes, and it becomes replaced by tear fluid (Erggelet, 1930). The importance of the composition of the liquid has probably been over-rated. Many patients insert their lenses dry (Mann, 1947) and others, having experimented with various liquids, use distilled water, boracic solution, tap water, or saliva without direct relation to any intolerance. The reaction of the conjunctival sac becomes more alkaline than normal in the presence of infection by staphylococcus or streptococcus, and returns to normal after treatment (Moray Girling 1944).

Physical Tolerance.—This depends upon an accurate fit of the lens upon the sclera, and, above all, demands that there shall be no pressure upon the limbus. Some contact between the lens and the central portion of the cornea causes no discomfort. General opinion in the past has favoured as large an area as possible of contact between the lens and the sclera, which has been termed the "glove fit" (Dallos, 1933; Jaensch, 1942; Beacher, 1944). The theory of Feinbloom (1945) and Pascal (1947) that greater comfort occurs with a small zone of contact awaits the test of time.

Psychological Tolerance.—It has been found repeatedly that contact lenses are tolerated more satisfactorily where a good reason exists for their wear (Mann, 1938 ; Williamson-Noble, 1938 ; Ridley, 1946). Great visual improvement as in cases of keratoconus, preservation of sight as in mustard gas keratitis, an intense dislike of spectacles, or the inability to hold a job without them are powerful stimuli which ensure the amount of perseverance which results in successful wear. Patients should be assessed with care when first presenting themselves for the prescription of contact lenses because about 20% can be found at this time to be unsuitable subjects (Ridley, 1946). Full instruction on the use of the contact lens should be given before the patient is allowed to use it. He must be confident in his ability to remove it and insert it and the lenses must be clearly marked to show the eye to which they belong and the direction of insertion (Pascal, 1939; Mihalyhegyi, 1940; Sverdlisch, 1942).

Sattler's veil.—This condition of corneal oedema has been recognized since the first use of contact lenses. The patient, wearing his lenses, notices the gradual onset of blurred vision in from 40 mins. to 14 hours and this steadily becomes more intense until the lenses are removed. The onset tends to be earlier in persons who have recently acquired the lenses, and perseverance may lengthen the period of wear before its appearance. Veiling has an earlier onset when irritation of the eye is present, and occurs more rarely with loose lenses of the Müller type. Paralysis of the facial nerve delays its appearance (Dallos, 1946). The condition is due to oedema of the corneal epithelium which starts imperceptibly over its whole extent, and, if the lenses are not removed, proceeds to formation of epithelial vesicles. Formation of the veil is an indication for temporary removal of the lenses (Sattler, 1939), but no residual damage occurs to the cornea unless the vesicles rupture and become infected (Dallos, 1946). This oedema is the result of a change in the physiological functions of the cornea either from interference with the blood circulation at the limbus which supplies and drains the corneal fluids, stoppage of the tear circulation, or cessation of massage of the eye by the lids. The eye exhales a large volume of CO₂ in 24 hours and a bubble of air in the glass assists respiration of the cornea (Fischer, 1929; Redslob and Tremblay, 1933). The earlier moulded lenses were fitted to allow a bubble of air to circulate at the limbus (Dallos, 1946), but this type of fitting caused discomfort and was discontinued for the "glove fit." A contact lens having a corneal portion with a flattened inside curve, so that it is in contact with the cornea centrally, and a hole to allow the entry of air to circulate at the limbal region, promises to overcome the problem of veiling which has for so long been detrimental to the full success of contact lenses.

Results of use.

Few reports have been published which give details of the results of using contact lenses, and this causes difficulty in making an assessment of the correct proportion of successful cases and failures. Patients having a pathological condition of the eyes wear the lenses for longer periods than those with moderate refractive errors who use them for cosmetic reasons. Williamson-Noble (1938) found that all his cases of keratoconus wore their lenses for 4 hours a day and that 80% wore them for more than 8 hours in the day. Professor Ida Mann (1947) reported that 82% of patients with keratoconus wear their glasses throughout the day and Phillips (1940) described a case where the lenses were worn continuously by day. Williamson-Noble (1938) stated that 70% of cases of mustard gas keratitis wear the lenses for 10 hours or more in the day, but Mann (1944) found that only 46% wore them with comfort through the working day and 21% for the whole of their waking life. Phillips (1940) reported three cases in which the lenses were worn all day. The relapses of corneal ulceration are diminished in most cases by the use of contact lenses and vision is improved in all except 2% where the scarring is very severe (Mann 1944). Patients with pemphigus wear their glasses all day with entire comfort and with great benefit (Whiting, 1937; Williamson-Noble, 1938; Phillips, 1939). Williamson-Noble (1938) found that 61% of myopic patients can wear their contact lenses for 6 hours or more in the day, and some for 14 hours a day. Mann (1947) found that 50% of myopes wore their lenses for 8 hours or more a day. Phillips (1939) reported two cases of high myopia who wore the contact lenses throughout the day. Contact lenses with monocular aphakia have not proved so useful in practice as was expected and Mann (1947) reported that only one case in ten, which were fitted, was wearing the lens with benefit. Ridley (1946) found that of all patients wearing the cut plastic type of lens the average duration of wear was $4\frac{1}{2}$ hours a day, and 28 hours a week, though the average time for which they *could* be worn was $5\frac{1}{4}$ hours a day. Some individuals wore them for much longer periods each day. Beacher (1944) regarded 8 hours wear a day as being "excellent." Descriptions of the Tangent Cone contact lens suggest that about 4 hours at a time is the tolerance expected (Feinbloom, 1945). Some attempt has been made to estimate the conditions under which contact lenses can be worn with the greatest comfort, but these are inconclusive (Williamson-Noble, 1938). Sixteen myopic patients were questioned regarding relative comfort of their contact lenses indoors and outdoors and, while ten noticed no difference, three said they preferred to wear them in the open air, though two said that they were happier on duller days, and one said they could only be worn indoors. Hot and smoky atmospheres tend to cause irritation and

reading may cause discomfort. Patients with keratoconus prefer to wear their contact lenses out of doors, but like to avoid too bright sunshine. Gyorffy (1940) described the treatment of patients with high myopia, irregular astigmatism, aphakia, and keratoconus with plastic contact lenses and the results were said to be "very promising." Gyorffy (1944) described the results of fitting contact lenses to 100 patients and observing them for 5 years. 60% were thought entirely satisfactory, the daily tolerance was not stated, 20% being worn for "reasonable periods," and 20% could not be worn due to veiling, photophobia and bubbles.

Summary.

Contact lenses may be of the greatest value both for increasing visual acuity without the use of spectacles and for treating certain organic disorders of the eye. They must be ordered with discrimination, fitted with care, and used with a due appreciation of their possible limitations. The problem of tolerance is not solved, there is no complete unanimity regarding the best type of lens, and the unknown factor of individual reaction to these appliances prevents a promise of complete success in any particular case.

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Abstracts

I. TEXT-BOOKS AND COMPOSITE MONOGRAPHS

208. Diseases of Children's Eyes.

J. H. DOGGART. pp. 288. 210 figs. (32 in colour). Published by Henry Kimpton, London, 1947.

A comprehensive treatise on diseases of the eyes and their associated structures as they affect children. After six introductory chapters dealing with the general principles of clinical examination in children and the anatomy and embryology of the eyeballs, their adnexa and central nervous connections, there follows a discussion (three chapters) on the developmental errors of the whole globe and of structures in close anatomical relationship to it and on congenital abnormalities of individual intra-ocular structures. Then follow chapters on the ocular complications and sequels of diseases of children affecting primarily other parts of the body; general methods of treatment and ocular hygiene; injuries of the eyeball; refraction; disorders of movement (squint, nystagmus, etc.); and diseases of the orbit, lacrimal apparatus, lids, conjunctiva and the various structures of the globe.

Stewart Duke-Elder.

209. The Natural Treatment of Eye Diseases.

W. LUFFHO. pp. 210. 100 figs. (32 in colour). Published by Henry Kimpton, London, 1947.

An amazing operation are lights can imp combination with disease, simple, show that treatment by various coloured "strength" of the eyes, and in com- oopathic drugs, can cure any ocular ble.

Stewart Duke-Elder.

II. HISTORY: EDUCATION

210. A Medical Report on South America. (Sur-América. Reportaje Médico.)

TOMAS R. YANES. 270 pages, innumerable figs. Ucar, Gracia y Cia, La Habana.

This is a very pleasant volume written in preparation for the Pan-American Congress in Cuba in 1948 by Tomas R. Yanes of Habana and with a preface by Dr. Durval Prado of São Paulo. It surveys the subject historically, treating of the original civilizations in South America, the times of the conquest, the colonial period and present-day activities, gives the history of the Pan-American Congress, and contains a list of the countries of South and Central America and a list of the cities therein. The writing is 1

Stewart Duke-Elder.

211. Mr. Surphlctc, an Item of Ophthalmological History.

R. R. JAMES. *Brit. J. Ophthal.*, 31, 3-8. Jan., 1947.

R. R. James gives a transcription of the Will of Richard Surphlctc, commission to administer which was granted in 1606. The testator was obviously a medical man, a scholar and a fanatical Calvinist. The will is of interest in showing what a doctor of that time thought

fit to take to sea, though his destination is obscure. It is known that a Richard Surphlete translated Laurentius' "A discourse on the preservation of the sight, and a treatise on melancholike diseases, of rheums, and of old age", the book being published in 1599; that a man of the same name published on farming at about the same time; and that there existed contemporaneously a Mr. Surphlete, a quack oculist who could not be commended "for any extraordinary skill though of long experience." The relationship or identity of these Surphletes is a matter of some doubt.

A. J. B. Goldsmith.

IV. EMBRYOLOGY

212. The Trochlear Nerve in the Human Embryo and Fœtus.

E. R. A. COOPER. *Brit. J. Ophthal.*, 31, 257-275. May, 1947. 11 refs. 11 figs.

This paper describes a series of observations upon serial sections of the cephalic region of human embryos 4 mms.-22 mms. in length. The position of the trochlear nucleus and of the trochlear nerve is observed in all specimens and the course of the nerve to its decussation is described. Suggestions are given to explain the apparent shifting forwards of the trochlear nucleus during development. This paper should be read completely by persons interested in the subject.

A. G. Cross.

V. HEREDITY

213. The Inheritance of Retinoblastoma.

H. F. FALLS. *J. Amer. Med. Assoc.*, 133, 171-174. Jan. 18, 1947.

The author presents two new pedigrees which lend support to the evidence that retinoblastoma is an hereditary form of neoplasia. The first pedigree presents evidence of bilateral retinoblastoma in female identical twins, occurring at approximately 6 months of age in both. The second pedigree is a further contribution to the list of reported observations of "vertical transmission." The condition occurred in a girl of 3½ years. Examination of the pedigree revealed that ocular tumours were common in the sibship of the child's mother, who also suffered from a retinoblastoma of her left eye at the age of 3½ years. In certain families the tumour appears to be transmitted as an irregular dominant trait, affecting only a portion of the gene carriers, whilst other families exhibit a simple recessive mendelian pattern. The incidence of retinoblastoma in the population is probably maintained by a certain number of mutations in each generation giving rise to sporadic cases. The case of the twins described in this article may represent such an instance; a mutation occurring in oögenesis or in spermatogenesis would account for both twins being affected.

A. G. Leigh.

VI. VEGETATIVE PHYSIOLOGY AND BIOCHEMISTRY

Metabolism.

214. Researches on the Composition of Aqueous in Man with Particular Reference to Glucose and Chloride Content (Ricerche sulla composizione dell'umor acqueo nell'uomo, con particolare riguardo al contenuto in glucosio e cloruro.)

G. VANZETTI and R. SEIDENARI. *Rassegna Ital. d'Ottal.*, 16, 65-77. Jan.-Feb., 1947. 19 refs.

A description of micromethods for titration of glucose and chlorides which need altogether only 0.08 cc. of aqueous humour is given. Estimations have been performed on 28 normal and pathological aqueous humours for glucose and on 21 for chlorides. The values have been compared with those contemporaneously determined in the blood. The results are as follows: for glucose the average level in the aqueous is lower than in the blood; the contrary obtains for chlorides, probably, in the authors' opinion, owing to the action of serum proteins. The authors tried to demonstrate an increase of proteins in the aqueous humours of pathological cases; Pandy's test for globulins and the trichloroacetic acid test for albumin were used; the results were negative.

N. Pagliarani.

215. Significance of Action of Paredrine on the Ocular Tension of Rabbits.

E. SCHMERL. *Amer. J. Ophthal.*, 30, 187-190. Feb., 1947. 1 fig. 1 table. 14 refs.

The application of 1% paredrine, which has an action similar to that of adrenalin, to the limbus of the eyes of 9 rabbits was found to cause a rise (3 mm. Hg. or more) in the intra-ocular tension of some of them. The extent of the rise was found to vary directly with the size of the pericorneal vascular bed which varies considerably in different species of rabbits; those with an extensive vascular bed showed a distinct rise in tension and vice versa.

The inference is that the out-flow of aqueous humour takes place through the canal of Schlemm into the pericorneal vessels and that by constricting these the drainage of the canal is obstructed and intra-ocular tension consequently raised. This is considered to lend support to the view that one of the forces controlling the circulation of the aqueous is hydrostatic pressure.

A. Lister.

216. The effect of galvanism on the intra-ocular tension.

1-590. May, 1947. 2 figs. 2 refs.

temple near the outer canthus and the

It is suggested that the effects observed may be due to changes in the calcium-potassium balance, the latter having a parasympathetic and the former a sympathetic action. This reaction to galvanism may have clinical applications.

A. Lister.

217. Permeability of the Excised Cornea.

W. O. LUNDBERG and A. L. ANDERSON. *Arch. Ophthalm.*, 37, 89-90. Jan., 1947.

The writers of this letter discuss certain data in articles on permeability of the corneal epithelium by Cogan and Kinsey (*Arch. Ophthalm.*, 27, 696, April, 1942 and 35, 292, March, 1946). They point out that the theoretical osmotic equivalent of a hydrostatic pressure of 400 mm. Hg. is not .007 as stated in the former paper but .07. This taken with the other data supports the conclusions of Cogan and Kinsey that the corneal epithelium possesses a high degree of semi-permeability in respect of sodium chloride solutions.

A. Lister.

Vascular Circulation

218. Information Given by Measuring the Retinal Blood Pressure.

(Quelques renseignements donnés par la mesure de la pression retinienne.)

P. BAILLART. *Progres Méd.*, 2, 21-22. Jan. 24, 1947. 3 refs.

The author points out that when measuring the retinal blood pressure, we measure both the pressure of the blood stream and the reaction of the vessel walls, whereas in measuring the brachial blood pressure, we measure only the actual pressure of the blood, because the walls of large vessels are not as strong as those of the arterioles; that is why the retinal blood pressure may not conform to the general tension, as often happens in general hypertension. The apparently unexplained variations of the retinal blood pressure are due to the reaction of the muscle walls. Those reactions may be studied more exactly in the retinal vessels than in laboratory experiments.

S. Vallon.

219. Influence of Oestrogenic Substances on Retinal Arterial Pressure. (Influenza degli estrogeni sulla pressione arteriosa retinica.)

S. Rosso. *Rassegna Ital. d'Ottal.*, 16, 3-15. Jan.-Feb., 1947. 30 refs.

A study has been done on the relation between oestrogenic substances and retinal arterial pressure. The substances, natural and synthetic, employed in these experiments have shown no action on retinal arterial pressure in normal or already saturated subjects. In primary amenorrhœa there is marked sensibility to the oestrogenic dose which causes a considerable lowering of retinal arterial pressure lasting several hours. The author thinks that the control of retinal arterial pressure after administration of oestrogens could help in the diagnosis of amenorrhœa of hormonal origin.

N. Pagliarani.

220. Researches on the Action of Sympamin, Ephedrin and Adrenalin on Retinal Arterial Pressure. (Ricerche comparative sull'azione della simpamina, efedrina ed adrenalina sulla pressione arteriosa retinica.)

G. SCUDERI. *Rassegna Ital. d'Ottal.*, 16, 17-39. Jan.-Feb., 1947. 40 refs. 3 diagrams.

Researches have been performed to study the behaviour of arterial retinal pressure after parenteral administration of sympathomimetic substances, namely adrenalin, ephedrin and sympamin. The results are as follows.

Ephedrin in doses of 5 cgr. and adrenalin in doses of 1 mgr. by subcutaneous injection cause a lowering of retinal arterial pressure, particularly of the diastolic. Sympamin in doses of 20-40 mgr. constantly increases it; lower doses (10 mgr.) cause practically no change in the diastolic retinal arterial pressure. The author concludes that the behaviour following the injection of ephedrin and adrenalin is probably due to compensatory passive congestion owing to the decreased ability of the retinal artery to contract in comparison with other vascular districts.

N. Pagliarani.

221. Circulatory Studies of the Fundus of the Eye. (In Hungarian.) P. WEINSTEIN and J. FORGÁCS. 8th Scien. meeting of Hungar. Ophthal. Soc. Dec. 14, 1946. *Orvosok Lapja*. (Hungarian Med. J.), 3, 389. March, 1947.

Circulatory Studies of the Fundus of the Eye. (In Hungarian.) P. WEINSTEIN and J. FORGÁCS. *Orvosok Lapja*. (Hungarian Med. J.), 3, 769-772. June, 1947.

A study of retinal venous pulsation.

Weinstein.

Vide abs. 10.

222. Some New Considerations on Arterio-Capillary Circulation of the Retina in General Hypertension. P. BAILLART.

Vide abs. 447.

223. Retinal Index of "Cerebral Vascular Compensation." M. MILLETTI and G. DI LUCA.

Vide abs. 445.

VIII. OPTICS, REFRACTION, ACCOMMODATION, OPTICAL APPLIANCES.

Physiological.

224. A Differential Method for Introducing Non-spherical Surfaces into Calculation of Optical Systems.

D. W. VOLOSOV. *J. Opt. Soc. Amer.*, 37, 342-348. 1947. 2 figs.

The introduction of non-spherical surfaces for a simultaneous improvement of the correction of several aberrations, particularly those of axial and thick oblique pencils, complicates the problem of computing. The elaboration of a special method is needed which will enable the following problems to be solved in the early stage of calculation without complicated ray tracing through non-spherical surfaces.

(1) To discover from the analysis of the structure of axial as well as oblique pencils which spherical surface of the system is to be shaped into a non-spherical one.

(2) To discover from this analysis the shape of a non-spherical surface without supplementary ray tracing through non-spherical surfaces.

(3) To evaluate the influence of the introduced non-spherical surface upon the remaining aberrations of the system.

An analytical statement of the method is given.

B. O. A.

Anomalies of Refraction : Accommodation.

225. Cardinal Points in Aphakia.

J. I. PASCAL. *Arch. Ophthalm.*, 37, 83-84. Jan., 1947.

The location and displacement of the cardinal points of an aphakic eye can be represented by a broad and flattened ring drawn from the regular ring representing the normal static eye. The article does not lend itself to abstraction and reference should be made to the text which includes a diagram.

A. G. Leigh

226. Control of Myopia.

J. D. KRATZ. *Amer. J. Opt. and Arch. Amer. Acad. Opt.*, 24, 15-21. 1947. 11 refs.

A classification of types of myopia and suggested treatment.

B. O. A.

227. A New Subjective Test for Astigmatism. (Ein neues Verfahren zur Untersuchung von Astigmatiker.)

L. GÄR. *Ophthalmologica*, 113, 93-105. Feb., 1947. 9 figs.

First an account of the existing subjective methods of testing for astigmatism is given, classified according to the physical principles upon which they are based. (The Scheiner-Rohr phenomenon, the various fans and the chromatic aberration test).

In 1939 the author put 100 patients through each of these tests, and found that the greatest number of patients responded satisfactorily to tests based on Scheiner-Rohr phenomenon,—i.e., the formation of circles of diffusion on the retina of ametropic persons. About 90% of them responded well to the fan test of Jones—radiation figure observed through a stenopoeic slit—and the more elaborate the test, the greater the number of unsatisfactory responses he found. Further he points out the discrepancy in the findings between subjective and objective measurements of astigmatism in the same person, and states that subjective tests are indispensable, as too great a proportion of patients whose refraction had been determined by objective methods only, are unable to wear the glasses thus prescribed.

The older subjective tests seemed to require more concentration and power of observation than could be expected from an average

individual. Long explanations were necessary to make the patient grasp the idea of the test and the accuracy of the test did not come below a 1.0 to 1.5 D. margin. In order to eliminate these errors the author combines two physical principles in his new test—diffraction and the fan.

His apparatus consists of a circular board of 30 cm. diameter mounted on to a square board of 35 cm. on each side. On this circular board a double cross is printed—the lines of which are of a width of 2 cm. with an interposed space of 2 cm. The lines are interrupted in the centre thus giving four small squares 4 cm. square each. These measurements were chosen to give a 1° angle of incidence from a distance of 5 metres. Further, a metal disc of the size of a trial lens with two holes of 1 mm. diameter each, placed 3 mm. apart is employed. This, if placed before the eye, covers a part of the field of vision allowing a clear central part bordered between two sections of a circle.

The procedure is as follows:—The patient is seated 5 metres away from the board, and looks at the double cross. Emmetropes will see this black and clearly defined. If the cross is blurred—ametropia is present. A patient with less than 2.5 D ametropia will still be able to see the spoke-shaped structure of the cross, therefore the ametropia will have to be corrected with spheres so as to leave no more than 2.5 D uncorrected. Then the disc is rotated. If the image of the cross remains blurred all around, the ametropia is spherical; if on the other hand, one leg of the cross becomes clear in any position, astigmatism is present. The axis of this can be found in the position where the side legs and centre square of the same line are in one line. In all other positions the centre square is seen to the side of the rest of the line.

The author finds the axis within 2° of the axis that can be found by objective methods, provided the patient sits straight with his head parallel to the board. After having found the axis, the metal disc is placed in the trial frame with its holes corresponding with the axis. The legs of the cross will now appear double—one clearly and the other blurred. Correcting lenses are placed in the frame until this doubling disappears entirely. When this is reached the disc is turned by 90° , and the procedure repeated. To overcome accommodation in hypermetropes, the author recommends approach from gross over-correction, by reducing the strength of the glasses until proper correction is reached.

Four uncorrected images are figured in the article—those of simple and compound astigmatism of low and high degrees. The author claims to have succeeded in eliminating the errors and fallacies of the previous subjective tests, and to have obtained higher accuracy in his results.

George C. Laszlo.

228. Negative Relative Accommodation.

S. TAYLOR. *Optician*, 113, 49-54. 1947. 8 refs.

The author maintains that negative accommodation exists primarily to stabilise positive accommodation in relation to the basic refraction of the eyes. It is only indirectly related to convergence insofar as positive accommodation is related to it. He found that dynamic retinoscopy was the most scientific and accurate method of measuring negative accommodation since the observed eye is made myopic with convex lenses for the target distance, whilst the positive accommodation is maintained by the sense of proximity of the fixation object.

B. O. A.

229. Accommodative Astigmatism.

J. M. O'BRIEN and R. E. BANNON. *Amer. J. Ophthalm.*, 30, 289-296. March, 1947.

There is frequently an increase in the amount of astigmatism and/or a change in the axis of the cylinder during accommodation. The following factors have been offered in explanation of these observations: (a) asymmetrical or sectional changes of the crystalline lens during accommodation; (b) a change in the optical effectivity of the spectacle lens in near vision due to accommodation; (c) changes in the vertical meridian (cyclotorsion) of the eye during convergence and depression with resulting changes in the axes of astigmatism; (d) changes in the corneal radii following convergence and depression of the eyes; (e) changes in the shape and position of the crystalline lens itself during accommodation. The authors studied a series of 50 eyes estimating their astigmatism for distant and near vision, by three techniques: (a) the Lancaster-Regan astigmatic chart and dial, a reduced photographic reproduction of the instrument being used for near vision; (b) a cross-cylinder, Jackson's technique (*Amer. J. Ophthalm.*, 13, 321-323, 1920); (c) stigmometry—a method based upon the ability of the eye to discriminate with precision the change in blurredness of the retinal image of a point-source of light. In an astigmatic eye the light source can be focused for one and then the other of the Sturm lines, the difference being a measure of the astigmatism. Results showed a constant increase in the astigmatism as measured by all three methods of about 8 to 10%, and approximated both in amount and direction to the loss in effectivity to be expected when cylinders prescribed for distance vision are used for near vision. The difference is of consequence only in astigmatism of the higher powers. Changes in the axes of astigmatism were found but they were not consistent with the torsional positions of the eyes in convergence and depression.

A. G. Leigh.

230. Eyestrain.

Sir STEWART DUKE-ELDER. *Practitioner*, 158, 377-382. May, 1947.

This article on eyestrain is suitable for the general practitioner and contains nothing new.

The factors in work causing eyestrain are discussed, the principle ones being faulty illumination, the fineness of work that may be

habitually undertaken and the lack of contrast between its constituent parts. The ocular defects causing eyestrain are described—presbyopia, refractive errors, deficiency of accommodation and convergence, muscular imbalance, and anisikonia. The symptoms, both local and reflex, are dealt with and the treatment by optical aids, general visual hygiene and the correction of correlated conditions of the general health and habits. It is pointed out that the possibility should never be neglected that even genuine symptoms of eyestrain may be the first indication of a much more deeply-seated trouble, and the easy routine of affording relief by glasses may and more serious breakdown, which, been averted by a more comprehensive patient's difficulties.

Stewart Duke-Elder.

Spectacles, Contact Lenses, etc.

231. Contact Lenses.

A. G. CROSS. *Practitioner*, 158, 406-412. May, 1947. 4 figs. 8 refs.

The author gives a short history of the development of contact lenses from the early blown types introduced by Müller of Wiesbaden to the modern types of ground and moulded lenses employed in England and America to-day. He discusses the optical and æsthetic advantages of contact lenses, indications for their use and the reasons for tolerance and intolerance to them. He points out that their greatest optical value is in conical cornea. Apart from this condition efficient selection of suitable subjects is most important. Careful fitting is essential as well as satisfactory teaching of the patient the methods of insertion and removal. He stresses that the problems associated with the fitting and wearing of contact lenses are by no means solved, and that with the best indications for their adoption and the most careful fitting by an experienced worker, comfort is by no means always attained. He concludes that the day is far off when contact lenses can entirely replace ordinary spectacles.

Stewart Duke-Elder.

232. Pressure Effects in Contact Lenses.

J. I. PASCAL. *Amer. J. Ophthal.*, 30, 324-325. March, 1947.

The author briefly reviews the development of contact lenses from the original lenses of Müller to the present-day tangent-cone lens. Until recently it was assumed that the larger the bearing surface of the lens on the eye, the more even would be the distribution of the pressure. The pressure of a contact lens is, however, an adherent pressure and such a pressure interferes least with the function of an eye when it is limited to a small area: Upon this principle the tangent-cone lens has been evolved; the bearing surface of the scleral portion is part of a cone which rests tangentially to the sclera and is adherent only over a narrow rim of 1-2 mm.

A. G. Leigh.

233. Ophthalmology of Contact Lenses.

H. SYKES. *The Pulse* (Johannesburg), 2, 10. Feb., 1947.

The author discusses the advantages of moldite over negacoll as moulding material. The different stages of the fitting process are described in some detail, particularly the determination of the proper size and the prevention of the rotation of the contact lens. The importance of the fluorescein test is emphasized and author shows how the fluorescein-filled and the blanched areas should be marked on a diagram, which serves as a permanent record and as a basis for planning and executing the necessary adjustments. Finally, the characteristics of a perfectly fitting contact lens are given. The patient should not take over the lenses before he is proficient to insert and remove them, which usually takes about three lessons of one hour duration each.

A. Jokl.

234. What Force Holds the Contact Lens in Place ?

J. I. PASCAL. *Amer. J. Opt. and Arch. Amer. Acad. Opt.*, 24, 13-14. 1947.

In contact lens work it has been accepted that the larger the bearing surface of the lens on the eye, the more comfortable the lens would be. Practical clinical observation has not borne this axiom out. It has been repeatedly shown that a moulded contact lens which fitted the eye "in spots" was more comfortable than the same lens adjusted to point-to-point correspondence.

The idea that a large contact bearing surface is preferable is based on the conception that the lens rests on the eye by gravity pressure, but this is not correct. If the patient with a properly-fitted contact lens in the eye separates his lids and looks straight down, the lens will not fall out. The force which holds the lens to the eye is an adherent pressure and in a sense the very opposite to the force of gravity. This adherent pressure is borne most comfortably when it is exerted over a small area of the eyeball.

B. O. A.

235. The Optometric Impression Technique in the Fitting of Contact Glasses.

E. and M. FREEMAN. *Amer. J. Opt. and Arch. Amer. Acad. Opt.*, 24, 203-238. 1947. 8 figs. 2 refs.

The authors describe their procedure in making impressions of the eye with moldite without anaesthesia. The technique can be adopted both with the aid of an assistant or single-handed. The method of making stone positive castings is also explained.

The routine of trial contact lens refraction, done monocularly, with a trial frame instead of a refractor is outlined. The sources of error in trial contact lens refraction are summarized as: (1) bubbles present in the liquid lens or absence of the liquid lens, (2) bubbles forming during refraction, (3) tears which must be blinked away, (4) induced astigmatism, produced by the poor centring of the trial contact lens in the eye with consequent lack of coincidence of the optic centres of the various lens systems involved, (5) wet eyelashes smearing the spectacle lens.

B. O. A.

236. The Man with the Contact Lenses.

F. DICKINSON. *The South African Optometrist*, 14, 10-12 and 24. Jan-March, 1947.

History of a patient with conical cornea who was greatly helped by correctly fitted contact lenses.

A. Jokl.

IX. PHYSIOLOGY AND PSYCHOLOGY OF VISION

237. The Visual Perception of Fine Detail.

H. HARTRIDGE. *Phil. Trans. Roy. Soc., London*, 232, 519-671. 1947.
4 figs. 114 tables. 59 refs.

[This article is not suited to detailed abstraction; it should be read in extenso by all those interested in the physiology of vision. Its contents will be noted in the sections in which it has been written; conclusions will be noted but the experiments supporting these conclusions will not be specified. No criticism is attempted but some of the conclusions will not meet with general agreement.]

Section 1 deals with the problems of visual acuity, which in the human eye is of very high order. The replacement of its lens system by an achromatic or apochromatic one would effect little or probably no improvement, yet there is considerable evidence that the lens is uncorrected for colour. The Stiles-Crawford effect reduces chromatic aberration at large apertures, while diffraction neutralizes it at small, but there is still the problem of medium apertures. Reduced colour vision occurs at small visual angles; this superficially resembles tritanopia; with further lessening of visual angle, complete colour blindness develops. The author uses in this paper the terms full colour vision, reduced colour vision, and colourless foveal vision.

Section 2. When the visual angle subtended at the eye by a yellow object is gradually reduced, the yellow loses its colour and is replaced by white; similarly, blue is replaced by dark grey or black. In both cases the area of the coloured object and the intensity of the light are important factors. Conditioning factors are the placing of another coloured disc close to the fixation disc and the brightness of the background. (Measurements are expressed in terms of: 1, size of objects; 2, distance of objects; 3, minutes of arc subtended at the eye; and 4, cone units covered.)

Section 3. Colour losses suffered by yellow and blue test objects take place more readily (at larger visual angles) when the pairs are in close juxtaposition.

Section 4. Red or blue-green test objects under similar conditions are replaced, red by black, and blue-green by white. Both changes are facilitated by the use of red and blue-green test objects in close apposition. The juxtaposition of a test object of the same colour as the fixation object, as with yellow and blue, reduces the visual angle at which colour changes take place.

Section 5 deals with the chromatic aberration of the eye and its correction. Yellow and blue fringes are not observed; both are very narrow, and the former are replaced by white, the latter by black (Sections 2-3). Similarly, red and blue-green are replaced by black and white (Section 4).

Section 6. The rival hypotheses put forward to explain changes in

colour vision which take place with reduced visual angles are discussed (the colour blind foveal centre ; contrast ; diffused light ; irradiation ; rod vision ; light intensity ; and neurological hypotheses). Of these the only one which fits the observed facts is that there is a neurological mechanism between the photoreceptors and the brain. This consists of four separate parts, for blue, yellow, red and blue-green. They are called the antichromatic responses.

The two eyes act entirely independently ; real and contrast colours are affected and the responses in one eye are unaffected by conditions in the other. The response centre, therefore, is situated between the right and left contrast centres and the binocular fusion centre. Data are given of the spectral regions which act as stimuli for the four mechanisms as far as they are known at present. The order in which the antichromatic responses come into operation corresponds with other investigations of the photochromatic interval—as light increases in intensity from zero, there is first colourless foveal vision, followed by reduced colour vision with primary colours of orange-red and blue-green ; later yellow and finally blue are added. The antichromatic responses operate in the order blue- yellow- red-blue-green. The leaving of the elimination of blue-green rays to the last has the advantages that their resolving power and intensity are greater and that they approximate to the rays used in crepuscular vision. A central linkage of the green retinal receptors with the brain centres for red and blue avoids loss of light and obviates a greenish tint in the object viewed.

Section 7. The eye is subject to chromatic difference in magnification and if there is dispersion of spectral colours at the fixation point chromatic stereoscopy will be manifest. This is due to the visual being non-coincident with the optic axis ; usually blue objects in the same plane as red ones appear at a greater distance owing to displacement of the red image to the temporal side of that of the blue. Correction of chromatic dispersion by a suitable prism or decentred lens effects a material improvement in visual acuity.

Section 8. Visual acuity for fine detail varies little when lights of different colour are used, and is so high that it can be accounted for only by supposing the retinal receptors for each colour used are as close together as possible. Experiments show none of the differences that would be expected on the hypothesis that the following factors are important : diffraction (blue light should give the highest acuity) ; aberration (any coloured light should be superior to white) ; retinal mosaic (white light should be best as stimulating most receptors) ; difference threshold (white should be best, having the highest intensity).

Section 9. Here the author puts forward a theory that retinal receptors responding to different colours have, by chance distribution, a cluster formation at the fovea, groups of red, green, etc., receptors being found together. The localization of clusters of

colour vision which take place with reduced visual angles are discussed (the colour blind foveal centre ; contrast ; diffused light ; irradiation ; rod vision ; light intensity ; and neurological hypotheses). Of these the only one which fits the observed facts is that there is a neurological mechanism between the photoreceptors and the brain. This consists of four separate parts, for blue, yellow, red and blue-green. They are called the antichromatic responses.

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Section 9. Here the author puts forward a theory that retinal receptors responding to different colours have, by chance distribution, a cluster formation at the fovea, groups of red, green, etc., receptors being found together. The localization of clusters of

periphery of the retina at constant speed under constant photopic illumination. Peripheral motion acuity was found to be inherently weaker than peripheral acuity for stationary objects and showed little or no tendency to improve with practice. The correlation between peripheral motion acuity measured for objects moving towards the line of central vision and that for objects moving away, was 0.86. Peripheral motion acuity declines rapidly between 30° and 60° from the line of vision in 72% of subjects.

British Abstracts.

250. Alteration in Critical Fusion Frequency in Tobacco Intoxication. F. ROUSSEL and R. WEEKERS.

Vide abs. 476.

251. An Extension of Helmholtz's Theory, Especially in Connection with Colour Blindness.

H. DE VRIES. 110th Meeting Netherlands Ophthal. Soc., June 15, 1946. Reported in *Ophthalmologica*, 113, 224-226. April, 1947. 2 refs.

The author argues for the existence of three sorts of cones, each susceptible to a division of the spectrum. Each sort of cone has its own power of discrimination of intensity and visual acuity. Colour blindness occurs if one of the kinds of cones has an anomalous susceptibility, or if one type of cone is either lacking or few in number. The spectral susceptibility of the "red" cones can be measured; it is the same in trichromats and deuteranopes. The brightness dispersion in the spectrum varies, and the relative difference between the brightness curve and the red curve is said to give an indication of the number of green cones.

A. J. B. Goldsmith.

252. On So-Called Colour-Stereoscopy.

J. W. WAGENAAR. 110th Meeting Netherlands Ophthal. Soc. June 15, 1946. Reported in *Ophthalmologica*, 113, 227-230. April, 1947.

The physiologic-optical factors involved are (1) the asymmetry of the eye; (2) the fact that rays temporally disparate of the fovea are localized in front of the fixation point; (3) chromatic aberration which in conjunction with (2) makes red appear to stand out in front of blue; (4) oscillating fixation. A psychological element also is probably involved. Illustrative examples are described.

A. J. B. Goldsmith.

253. Use of a Monochromatic Colorimeter for the Study of Colour-blindness.

J. A. VAN DEN AKKER, J. E. TODD, P. NOLAN, and W. A. WINK. *J. Opt. Soc. Amer.*, 37, 363-387. 1947. 14 figs.

An instrument is described, employing the principle of monochromatic colorimetry, by which it is possible to classify defective colour-vision and to study the thresholds with regard to shape, size, and orientation, of any observer.

The method of investigation was based on the fact that when an object is illuminated with white light, the colour seen may be

matched by illuminating a white body with a mixture of white light and spectral light, provided that the colour of the illuminated object does not fall in the spectral region of the purples. If the colour lies in the excepted region, two spectral lights (usually one red, the other blue) must be mixed with the white light, or else the light from the object must be mixed with a single spectral light of hue complementary to the colour of the body to obtain a colour matching the white body under the white illuminant.

The method was found to be too slow for routine testing, but of value in fundamental studies of both normal and abnormal colour-vision.

B. O. A.

254. The Appreciation of our Present Signal Colours by Colour-Defective Persons. (Hur uppfatta de färgsiunesdefekta våra nuvarande signalfärger?)

L. KUGELBERG. *Svenska Läkartidningen*, 44, 1068-1074. May 1, 1947.

Kugelberg has made practical colour vision examinations on 19 subjects with defective colour sense, with the object of studying their conception of traffic-signal colours chosen with a view to making it easier for colour-defective persons to move about in traffic. The wave-bands used in Sweden for the signal colours of street traffic have the following spectral maxima: red 650 μ ., green 495 μ ., and yellow 595 μ .. The tests were made under optimal conditions for the experimental subjects. 11 of the subjects misinterpreted the signals, mistaking red for green or yellow and *vice versa*. The practical tests showed no advantages over the usual tests with lanterns or Ishihara tables in the judging of the colour sense defect.

E. Godtfredsen.

255. Sex Differences in Colour Vision.

R. W. PICKFORD. *Nature*, 159, 606-7. 1947.

More men than women have major red-green defects, but more women than men have slight red-green weakness. Major red-green weakness is thought to be an incompletely recessive sex-linked character. No sex difference has been observed in yellow-blue vision.

British Abstracts.

256. Colour Vision in the Consulting Room.

F. R. NEUBERT. *Brit. J. Ophthalm.*, 31, 275-288. May, 1947. 13 tables. 41 refs.

40,380 men were tested on the Ishihara (8th edition) plates; 2,235 made mistakes suggesting defective colour sense and all these were further tested by other methods, the American Optical Company plates and various forms of lantern. The results in

regard to the terms normal, safe, unsafe, red-blind and green-blind as given by the various methods of testing are compared. The Ishihara plates give a higher proportion of "unsafe" defectives than either the American plates or the aviation lantern, but the tests, although more sensitive than the lantern, are unreliable and the results differ with different series of plates. For this reason the author considers that more attention should be given to lantern tests and discusses the considerations involved, particularly Guttman's postulates. From these and on the basis of observations with different types of lantern, he concludes that the use of small apertures in the lantern serves no useful purpose, that if the sensitivity of the results of single, double and treble light examination are compared, the sensitivity of the test increases with the number of lights used, and that a triple light lantern with controlled illumination is the most sensitive and reliable test for discriminating between the safe and unsafe. In this lantern the apertures are 10 mm. diameter, the brightness of the light can be varied, and the patient is asked to name the three colours shown. Under the conditions used it is considered that a single error indicates that colour vision is unsafe.

A. J. B. Goldsmith.

257. Psychology of Vision. (*Psychologie de la vision.*)

E. HARTMANN. *Ann. d'Ocul.*, 180, 193-205. April, 1947. 13 refs.

The author discusses perceptions of light, colour, form, direction, size and distance, and the interpretation of sensory information from ocular movements and binocular vision. His conclusion is the old one that conscious visual perception is entirely different from the physical stimuli which initiate the visual sensation; the last is elaborated and synthesized with proprioceptive and other impulses, with memory, and perhaps with hereditary concepts. Sensations are often fragmentary, but perceptions are of the whole—this is exemplified particularly in reading—and sensations can alter without necessarily affecting perceptions. [The psychology of vision as here presented is reminiscent of, and offers little or nothing to refute the Berkeleian Philosophy of Subjective Idealism.]

A. J. B. Goldsmith.

258. First Clinical Trials of Electro-Retinography. (*Premiers essais cliniques d'électro-rétinographie.*)

A. MAGITOT. *Ann. d'Ocul.*, 180, 169-177. March, 1947. 5 figs.

A general review of the subject with particular reference to the work, technique and conclusions of Gustav Karpe (*Acta Ophthal.*, Supp. 24, 1946). Karpe confined his attention largely to the B phase of the electro-retinogram which corresponds with the efflux into the optic nerve. Various categories of derangement are described; the B wave is diminished in such conditions as myopia, detachment, vascular disturbances, cataract and glaucoma. In

circulatory disturbances the negative phase may preponderate, the A wave being most marked. The electro-retinogram may be absent in such conditions as retinitis pigmentosa, or the reaction may be accentuated by venous stasis, or optic neuritis. The author emphasizes Karpe's own admission that so far the number of cases tested in this way is too small to permit of any definite conclusions as to its clinical value, but points out that, perhaps in combination with electro-encephalography, it may help eventually to follow the visual impulse from the rods and cones of the retina to the cells of the visual cortex.

A. J. B. Goldsmith.

X. METHODS OF EXAMINATION.

259. Plastic Visual Test Plates.

A. G. DEVOE and V. H. DIETZ. *Amer. J. Ophthal.*, 30, 325-326. March, 1947. 1 fig. 3 refs.

Routine ophthalmological work does not demand the *exact* measurement of visual acuity, but this becomes necessary in estimating the medical grades of members of the armed forces. Individuals who wish to qualify for a higher visual standard than they possess, may resort to such stratagems as memorization of charts. Some workers have overcome this by the Landolt ring test. A test is described which is practical, accurate, and unlearnable. A diffusion screen of double-matte plastacele was constructed in such a manner that it could be clamped on a standard gooseneck desk lamp. This, when used with a 15 watt frosted bulb, gave diffused lighting of about 25 foot candles. Test figures were cut from vinyl copolymer (vinyl chloride and vinyl acetate) and laminated to lucite plates. These could be made to any Snellen value and could be viewed in front of the diffusion screen. This it is claimed achieves standard conditions for the accurate evaluation of vision.

A. G. Cross.

260. On Drawing the Fundus Oculi. (El dibujo del fondo de ojo.)

H. ARRUGA. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 117-125. Feb., 1947. 11 figs. (4 coloured).

This paper deals in a practical manner with the technique of making drawings of the *fundus oculi*. Arruga describes his method of utilizing a hollow rubber ball with part of its wall removed so as to make it resemble an eyeball minus the portion anterior to the ora serrata. The drawing is made on the inside of the ball and photographed before and after spreading it out on a plane surface. To get the best results it is necessary to use an acrograph as well as the pencil and brush. Oil or water colour may be employed. The instruments are illustrated and their use described. H. M. Traquair.

261. **Refraction-Measurement of the Retina in the Erect Image.**
(Refracto-retinometría a la imagen recta.)

E. GARCIA MARQUEZ. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 126-133. Feb., 1947. 4 figs. 1 table. 10 refs.

A technical paper on the construction and use of a modified form of ophthalmoscope designed to project a reticule on to the retinal surface in order to make comparative records. It is claimed that with a little care measurements as fine as 0.625 mm. can be made.

H. M. Traquair.

262. **Perimetric Charts in Equivalent Projection allowing a Planimetric Determination of the Extent of the Visual Fields.**

J. TEN DOESSCHATE. *Ophthalmologica*, 113, 257-270. May, 1947. 8 figs. 3 tables. 16 refs.

The author discusses the cartographers' difficulties in representing the surface of a sphere on a plane surface; these also arise in the graphical representation of the visual fields. He describes a method of equivalent azimuthal polar projection which makes it possible by measuring the graphed area of the visual field to assess accurately the extension of the retinal surface which is still functioning. (In practice the visual field of the patient on the chart is cut out and weighed against the normal visual field on a similar chart.) This gives a figure expressing the relative surface of the field of vision still functioning; while it may assess the progress of glaucoma or retinitis pigmentosa, it does not measure the usefulness of the remaining field, for a generally contracted field of area 0.5 may be of more use than a hemianopic one of the same area.

The author also describes briefly attempts he has made to assess the area of the visual field in terms of percipient elements. Charts constructed on these lines are asymmetrical, almost impossible to plot and of no clinical value; they show, however, how heavily loaded is the central area of the field in comparison with the periphery.

A. J. B. Goldsmith.

263. **Clinical Applications of the Equivalently Depicting Perimeter-Scheme.**

H. E. HENKES. 110th Meeting Netherlands Ophthalm. Soc. June 15, 1946. Reported in *Ophthalmologica*, 113, 237, April, 1947.

On this scheme the functioning area of the retina is given a numerical value.

A. J. B. Goldsmith.

264. **A Combination Red Filter and Occluder.**

W. L. HUGHES. *Amer. J. Ophthalm.*, 30, 609. May, 1947.

This instrument consists of a ground plastic red filter 3.5 cm. by 9 cm., which is blackened at one end and has a handle attached to the middle. It was designed to simplify the technique of the parallax test for heterophoria, but it is also useful as an occluder for taking vision or performing the alternate cover test. It can also be employed to investigate binocular vision and to analyse diplopia.

A. G. Cross.

265. An Improved Dark-Adaptometer.

W. KOCH. *Brit. J. Ophthalm.*, 31, 235-237. April, 1947. 1 ref. 1 fig.

This paper describes improvements which have been made in a dark-adaptometer first described in *Brit. J. Ophthalm.*, 29, 234, May, 1945, in order to increase the range of intensities of light stimuli. It is recommended that both these papers should be read in their original publication.

A. G. Cross.

266. A Treatise on Gonioscopy.

M. U. TRONCOSO. pp. 306. 117 figs. (35 in colour). Published by Davis and Co., Phila. (1947).

A detailed and elaborate treatise on gonioscopy by its chief exponent in America. A description of the comparative anatomy of the angle of the anterior chamber in mammalia is followed by that of the anatomy and micro-anatomy, the physiology and embryology (by Ida Mann) of this region in man. Then follows a history of the development of gonioscopy, a description of the various techniques used and the clinical appearances of the normal angle. The remainder of the book deals with pathological appearances—in senility, congenital anomalies, injuries, inflammations of the iris and ciliary body, tumours, glaucoma (which is elaborately dealt with in three chapters), post-operative conditions and certain miscellaneous diseases. There are useful bibliographies to each chapter.

Stewart Duke-Elder.

267. Clinical Methods of Neuro-Ophthalmic Examination.

A. KESTENBAUM. pp. 384. 65 figs. Published by Wm. Heinemann, Ltd., London (1947).

This book presents a review of the clinical methods of ophthalmic examination which may be helpful in the differential diagnosis of neurological diseases: it is not a text-book of neuro-ophthalmology. After a review of the anatomy of the visual pathway and a discussion of the technique and findings of perimetry, the following clinical subjects are discussed from the point of view of the importance of the ophthalmic symptomatology—diseases of the optic nerve, chiasmal lesions, retro-chiasmal lesions (homonymous hemianopia), ocular palsies, conjugate deviations, nystagmus, anomalies of symmetrical eye movements (convergence, divergence, skew deviation, etc.), of the pupils and ciliary muscles, and of the palpebral fissure (including ptosis, exophthalmos, facial spasms and palsies, etc.), and functional disturbances. The book abounds in schemata and formulated rules for topical differential diagnosis which (although dangerous if regarded as valid laws) are useful indications of the probabilities in a given case. The subject matter contains much that occupies an intermediate position between neurology and ophthalmology and therefore has tended to suffer neglect from both sides. A valuable bibliography is appended.

Stewart Duke-Elder.

XI. GENERAL PATHOLOGY

268. **Growth of Avian Tumours Other than the Rous Sarcoma in the Anterior Chamber of the Guinea-pig Eye.**

E. W. SHRIGLEY, H. S. N. GREENE and F. DURAN-REYNALS. *Cancer Res.*, 7, 15-20. Jan., 1947. 13 figs. 9 refs.

Fragments of five avian tumours were transplanted into the anterior chamber of the eye in guinea-pigs. The tumours comprised two fowl sarcomata of spontaneous origin and three sarcomata induced by methylcholanthrene—one in a fowl, one in a guinea-pig, and one in a pigeon. The fragments grew temporarily, retaining their characteristic histological structure, but did not fill the anterior chamber as similarly transplanted mammalian tumours do; in general, regression was evident after 10 to 20 days. *L. Foulds.*

269. **Growth of Human Trophoblast in the Eye of the Rabbit.**

C. GURCHOT, E. T. KREBS Jr. and E. T. KREBS. *Surg. Gynaec. and Obstet.*, 84, 301-312. March, 1947. 13 figs. 96 refs.

This is a preliminary report on some experiments in cancer research in which human placental cells are cultured in the anterior chamber of the eyes of rabbits. *A. J. B. Goldsmith.*

270. **Notes on the Use of Dead Tissues in Ophthalmology.**

(Remarques sur l'usage des implantations de tissus morts en ophtalmologie.)

A. MAGITOT. *Ann. d'Ocul.*, 180, 146-148. March, 1947.

The author discusses some of the biological factors involved. He concludes that a bony sphere, homologous or heterologous, sterilized in formalin or alcohol, and with all cartilage removed, is the ideal material for implantation into Tenon's capsule after enucleation. The muscle and connective tissue fibres of the host grow into the Haversian canal system of the graft. Similar bony grafts can also be used in plastic reconstruction of the lids.

A. J. B. Goldsmith.

271. **Histological Examination of a Clear Corneal Graft; the Behaviour of Nerves.**
(Examen histologique d'une greffe cornéenne transparente; le comportement des nerfs.) A. FRANCESCHETTI and J. BABEL.

Vide abs. 333.

272. **The Effect of Gamma Radiation on Mitosis in Vitro.**

I. SIMON-REUSS and F. G. SPEAR. *Brit. J. Radiol.*, 20, 63-70. Feb., 1947. 12 figs. 16 refs.

Choroidal and sclerotic tissue of 10- to 11-day-old chick embryos was cultured, and a photographic study made of the effects of doses ranging from 55 to 1,320 r of gamma radiation, delivered at 22 r per minute, to determine the average duration of mitosis before and after exposure. This was compared with similarly irradiated cultures fixed and stained for histological examination at various intervals

after exposure ; these were investigated quantitatively and qualitatively. For quantitative observation the total number of mitotic cells in the irradiated specimen was compared with control specimens from a similar group of unirradiated cells.

A large number of abnormal mitotic figures were seen at intervals after irradiation, when a corresponding timing experiment showed that the majority of observed dividing cells completed division within normal time limits. Expressed in a graph, these observations indicate that after each exposure there is a drop in the number of normal mitotic cells, and that even the lowest dose of irradiation causes an appreciable number of mitotic abnormalities. Types of abnormality noted were : clumped metaphases, giant metaphases, unseparated telophases, binucleate daughter cells, fragmentation of chromosomes, and breaking up of cells. Gross individual abnormality is associated with high radiation dosage, but these experiments show that even with low dosage a proportion of cells is affected either structurally or functionally. Some of these cells, which on staining reveal recognizable abnormalities, are still able to complete division within normal time limits. The duration of normal mitosis *in vitro* agreed with the findings of other observers. Under comparable culture and temperature conditions the average is 18 to 20 minutes for the total process, with 16 and 40 minutes as outside limits.

D. G. Williams.

273. Research in Zurich.

M. J. ROPER-HALL. *Brit. J. Ophthalm.*, 31, 223-228. April, 1947. 10 refs.

This is an outline of some of the work being done in Professor Amsler's clinic in Zurich. Aqueous humour, obtained by puncture of the anterior chamber is examined in regard to cell content, proteins and bacteriology. Both cells and protein are increased in inflammatory conditions; the cells may derive from the blood or from the reticulo-endothelial system. Bacteria, mostly phagocytosed, are found in 19% of cases of iridocyclitis, keratitis, and panophthalmitis ; positive cultures (3% of cases) grow mostly staphylococcus albus. In another series of experiments the permeability of the blood-aqueous barrier to fluorescein is being studied with an adapted slit lamp ; the results in normal and abnormal cases are summarized. Permeability is increased in inflammatory conditions, after trauma, in many cases of glaucoma, and with many general diseases. Histamine enormously increases permeability while intravenous calcium decreases it. Further investigations are being made into the Tyndall effect in the aqueous as a measure of the permeability of the blood-aqueous barrier to proteins.

[The article is itself in essence a summary of the work being done and to some extent an abstract of the papers published by Amsler and his assistants ; references to these papers are given.]

A. J. B. Goldsmith.

XII. GENERAL BACTERIOLOGY & IMMUNOLOGY.

274. **Researches in the Assessment of Allergy in Ocular Tuberculosis for Diagnostic and Prognostic Purposes.** (Ricerche allergometriche in soggetti affetti da tubercolosi oculare ai fini diagnostici e prognostici.)

G. MISSIROLI. *Boll. d'Ocul.*, 26. 31-42. Jan., 1947. 15 refs.

A general article about the assessment of allergy in 309 patients with affections suspected to be tuberculous in nature, using a substance of high tuberculin reactivity (M.D.c.terr.) at different concentrations. Most of the patients showed an elevated tuberculin reactivity which was higher than that found in adults without active tuberculous disease. In 44 patients with tuberculous ocular disease, improvement coincided with a decrease of the cutaneous tuberculin reactivity.

C. Guiseppe.

275. **Researches in the Assessment of Allergy in Patients Affected by Ocular Tuberculosis in Relation to Tuberculin Therapy.** (Ricerche allergometriche in soggetti affetti da tubercolosi oculare ai fini della terapia tubercolinica.)

G. MISSIROLI. *Boll. d'Ocul.*, 26. 43-53. Jan., 1947. 9 refs.

In 32 patients affected by ocular tuberculosis a course of tuberculin therapy to effect desensitization was carried out. Twenty-four patients greatly improved on this therapy which coincided with a diminution of the cutaneous reactivity to tuberculin tests.

C. Guiseppe.

XIII. GENERAL THERAPEUTICS

276. **"Sulpha-combination"—A New Chemotherapeutic Principle.** A. R. FRISK, G. HAGERMAN, S. HELANDER and B. SJÖGREN. *Brit. Med. J.*, 1, 7-10. Jan. 4, 1947. 4 figs. 14 refs.

In order to avoid the renal complications and changes in the blood which are liable to arise during sulphonamide therapy, the authors suggest the use of a combination of sulphonamide drugs administered simultaneously to obtain a high blood level without risk of kidney damage. The solubilities in urine were determined in relation to pH. When mixtures of sulphadiazine, sulphamerazine, and sulphathiazole, together with those of their respective acetyl derivatives, were used it appeared that all six drugs dissolved independently of one another. With "sulphadital," a mixture of 37% sulphadiazine, 37% sulphathiazole, and 26% sulphamerazine, it was proved possible to obtain very much higher blood levels without renal damage than with the drugs given separately. This method of administration of sulphonamide drugs appears greatly to lessen the risk of renal complications.

Stewart Duke-Elder.

277. Distribution of Penicillin in the Eye after Subconjunctival Injection.

G. W. S. ANDREWS. *Lancet*, 252, 594-596. May 3, 1947. 3 figs. 4 refs.

The distribution of penicillin in the various tissues and fluids of the eye was studied in rabbits after subconjunctival injection of 50,000 units of pure sodium penicillin dissolved in 0.5 c.c. of normal saline into one eye. Material was obtained for estimation of penicillin levels after 15 minutes, 30 minutes, and 1, 1½, 2, 3, 4 and 6 hours. Four rabbits were used for each estimation and the results averaged.

In the injected eye high levels were found in all the tissues except the lens and the vitreous; within three to six hours these levels had fallen to below an adequate bacteriostatic level. Half-an-hour after the injection the following concentrations were found in the ocular tissues expressed in units per c.c. of fluid or gm. of tissue:—

aqueous 16.0, vitreous 0.1, cornea 167.0, lens 1.2, anterior uvea 64.7, anterior sclera 213.5, posterior uvea 117.5, posterior sclera 170.0, optic nerve 109.6, extra-ocular muscles 480.0.

In the blood the level was 3.7 units per c.c.

The most interesting part of the investigation was the concentration of penicillin in the other (uninjected) eye, where a similar distribution was found, but with lower levels. It is evident that the penicillin in these tissues must have been derived from the blood, and yet, surprisingly, in the cornea, sclera, posterior uvea, and optic nerve, the levels in units per gm. of wet tissue exceeded that in the blood.

These findings suggest that bacteriostatic levels may also be obtainable in the eye after intramuscular injections of penicillin, but that much larger doses would be needed, and that therefore local injection is more economical. The relative efficiency of subconjunctival or intramuscular injections, or a combination of both, will have to be assessed by clinical trials. The author concludes that the highly purified penicillin now obtainable is non-irritant to the eye and can thus be safely given in large doses by subconjunctival injection with the production of very high local concentrations in the ocular tissues. Its use may prove a valuable advance in the treatment of infections of the eye by penicillin-sensitive organisms.

Stewart Duke-Elder.

278. Experimental Observations on the Intravitreal Use of Penicillin and other Drugs.

J. P. DUGUID, M. GINSBERG, I. C. FRASER, J. MACASKILL, I. C. MICHAELSON and J. M. ROBSON. *Brit. J. Ophthalm.*, 31, 193-211. April, 1947. 5 figs. 7 tables. 6 refs.

Infection of the vitreous is of special interest because, firstly, of its gloomy prognosis and, secondly, of the fact that drugs given either

orally or parenterally do not reach the vitreous in concentrations adequate to deal with infection. This paper describes an investigation into the value of injecting drugs directly into the vitreous.

The drugs tested were: commercial and pure sodium penicillin (2,000 and 5,000 units), sulphacetamide (30%), marfanil (30%), and V.335 (p-methyl sulphonyl benzylamine) (30%). Control experiments were made with normal saline. 0.05 or 0.1 cc. of each drug was injected by means of a special syringe. The experiments were designed to discover (a) the toxic effect of each drug, (b) their rate of diffusion within the eye after injection, and (c) their value in treating experimentally produced infection.

(a) All the drugs, with the exception of pure penicillin, had toxic effects upon normal eyes which preclude their clinical use by intra-vitreous injection. Commercial penicillin, for instance, caused permanent vitreous opacities and areas of retinal destruction with glial replacement and new vessel formation. The toxic effects of sulphacetamide had a peculiar latent period of some months. Pure penicillin did have some toxic effects (3 out of 8 eyes showed some retinal destruction), but not nearly so marked as did commercial penicillin.

(b) Only the rates of diffusion of pure penicillin and sulphacetamide are reported. In both diffusion was rapid, a high concentration being attained in the choroid, aqueous, and cornea within an hour of injection. A therapeutic concentration persisted in the vitreous for 2 to 3 days, and in the rest of the eye for 1 to 2 days.

(c) The therapeutic effect was tested on eyes infected with hæmolytic streptococci. Pure penicillin prevented the development of infection if injected up to 6 hours after inoculation, but had no effect if treatment was delayed for 24 hours, even when injected with sulphacetamide. The other drugs also gave favourable results but are obviously too toxic to be worth attention.

It is concluded that the injection into the vitreous of pure penicillin only is indicated and is justifiable in certain cases of intra-ocular infection.

A. Lister.

279. Controversial Points in Ocular Penicillin Therapy.

N. L. VON SALLMAN. N.Y. Acad. Med., Section of Ophthal., Oct., 1946. Reported in *Arch. Ophthal.*, 37, 253. Feb., 1947.

The mechanism involved in the passage of penicillin across the blood-aqueous barrier and the means of influencing this passage were first discussed. The following features of surface application were considered: (1) continuance of penicillin activity in the conjunctival sac after instillation, (2) iontophoresis, (3) value of high drug levels in the aqueous. The effects of intra-ocular injections of crystalline penicillin and of preparations of isolated species of *Penicillium* were described on the basis of histological studies.

A. G. Cross.

280. Intra-ocular Penicillin in Severe Intra-ocular Infection.

L. R. HAAS. *J. Amer. Med. Assoc.*, 134, 527. June 7, 1947.

A case is described of a perforating wound in the eye of a boy aged 10 resulting from chopping wood. The wound was in the centre of the cornea and infection and hypopyon resulted. 36 hours after the accident, treatment was commenced by penicillin given intramuscularly, by ointment and by injection in the anterior chamber on 4 occasions. One month later the eye was quiet with normal vision. The infecting organism was not isolated.

Stewart Duke-Elder.

281. Treatment of Late Post-operative Intra-ocular Infections with Intra-ocular Injection of Penicillin.

J. SCHNEIDER and S. S. FRANKEL. *Arch. Ophthalm.*, 37, 304-307. March, 1947. 9 refs.

Two patients in whom intra-ocular infection followed extra-capsular cataract extraction are described in this paper. The older patient had senile cataract, and the younger a traumatic one. They received typhoid-paratyphoid A and B vaccine intravenously, sulfadiazine by mouth, and parenteral penicillin. 500 units of penicillin in 0.2 c.c. of distilled water were injected into the anterior chamber in the senile case, and into the vitreous in the traumatic case. Both eyes were saved from evisceration, but had no useful vision.

W. J. B. Riddell.

282. Preventive Penicillin Therapy in Operation for Cataract.

(Penicilioterapia preventiva en la operacion de la catarata.)

M. SANCHEZ MOSQUERA. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 48-51. Jan., 1947.

The author describes his experience in the use of penicillin as a preventive of infection in cases of cataract operation in which focal sepsis or systemic disease caused him to fear the possibility of postoperative inflammation. 150,000 units are recommended by intramuscular injection, partly before and partly after the operation. Good results are claimed with minimal discomfort from the injections. Seven cases were treated.

H. M. Traquair.

283. Anticoagulant Medication (Heparin, Dicumarol) in the Treatment of Thrombosis of the Retinal Veins. A. P. PALOMAR.

Vide abs. 347.

284. Atypical Ocular Tuberculosis (Diagnosis and Treatment). (Les tuberculoses atypiques oculaires. Etude diagnostique et thérapeutique.)

A. JACQUELIN, J. TURIAF, P. V. MORAX and J. L. DESCHAMPS. *Semaine d'Hôp., Paris*, 16, 1043-1046. April 28, 1947.

Atypical ocular tuberculosis is often undiagnosed for three reasons:—

(1) It seldom occurs in association with pulmonary tuberculosis.

- (2) The associated tuberculous adenitis is discrete and is only found by X-ray examination.
- (3) The ocular symptoms are not pathognomonic.

The authors claim that a definite diagnosis is given only by the tuberculin test. A subcutaneous injection of 1/10 mgr. or 1/2 mgr. or, if necessary, of 1 to 3 mgr. gives a local, general and ocular reaction within 24 hours; this last reaction consists of pain, photophobia, blurred vision with the following objective signs: conjunctival injection, corneal oedema, sometimes iritis and ocular hypertension. All these signs disappear within 12 to 24 hours, but they are often bilateral and sometimes there is acute and transitory articular swelling and asthma. All the patients who presented these reactions were cured by tuberculin therapy.

The authors advise that the doses of tuberculin must be progressive and different for each patient; at the same time the anti-toxic function of the liver must be stimulated and, if possible, the patient must be sent to a sanatorium. But even in the case of patients continuing their usual work, the authors had good results with tuberculin therapy.

S. Vallon.

285. The X-ray Treatment of Inflammatory Diseases.

M. CRIPPS, A. H. BAKER, F. FREUND, and N. S. FINZI. *Proc. R. Soc. Med.*, 40, 109-116. Jan., 1947. 2 figs. 10 refs.

This is a symposium on the effects of radiology in inflammatory conditions. Cripps discusses the use of irradiation in the treatment of ophthalmic conditions. The effect of X-rays of 100 kV. with 1 mm. aluminium filter used at 27 cm. focal skin distance is to cause an increase in intra-ocular tension, the doses being 200 to 225 r (B.S.) over 10 to 14 days in 3 doses for acute lesions or traumatic cases, and 125 to 175 r over 21 days in 3 doses for chronic lesions. In minor lesions improvement occurred in from 3 to 7 days. In more severe lesions it took longer. The conjunctiva is the most sensitive of all the ocular tissues. The lens is resistant, but may become cataractous. Corneal ulceration and interstitial keratitis may occur with over-dosage. The retina is resistant. Prolapsed vitreous becomes opaque and then retracts. The process is complete in 48 hours. There is no subsequent impairment of its transparency. Pain of nerve origin is relieved, but pain due to glaucoma is not. Irradiation accelerates the healing of wounds, relieves congestion of the uveal tract, facilitates the "taking" of fibrin grafts to the sclera, and diminishes the risks of sympathetic ophthalmia. The mononuclear leucocytosis due to a specific inflammatory ocular lesion appears after irradiation of the lesion. The author warns against the use of irradiation in eyes with increased intra-ocular tension.

F. Ellis.

286. Indications for "Contact" Radiotherapy in the Treatment of Ocular and Lid Tumours. (Indications de la radiothérapie de près "dite de contact" dans le traitement des tumeurs oculo-palpébrales.)

F. BACLESSE and A. ENNUYER. *Arch. d'Ophthal.*, 7, 5-17. 1947. 21 figs.

The authors give an excellent and extremely well illustrated account of their experience at the "Foundation Curie", Paris, in the treatment of 200 patients with malignant tumours of the eyelids or conjunctiva.

They regard contact therapy as the method of choice in the treatment of carcinoma of the lids, provided that the tumour is not more than 20-25 mm. in diameter and provided that there is neither deep infiltration nor marked surface irregularity. Large tumours require multiple exposures and the consequent overlapping of the fields may give rise to over-dosage. The vegetative type of tumour is also difficult to treat in an even manner by contact therapy. They therefore regard these two factors, the extent and the degree of infiltration, rather than any variation in the histological type, as forming the best guide for the choice of therapy.

With regard to limbal tumours, the authors feel that only superficial ones are suitable for radiotherapy, and they consider that lymphoid tumours of the conjunctiva, such as lymphosarcomata, are better treated by a penetrating type of therapy.

In the treatment of angiomata of the lids, Baclesse and Ennuyer believe that contact therapy is without any doubt the method of choice, since it is quite as effective as other methods and, in addition, produces better æsthetic results.

G. I. Scott.

287. The Treatment of Retinitis Pigmentosa with Special Reference to the Filator Method. D. M. GORDON.
Vide abs. 356.

XIV. GENERAL OPERATIVE SURGERY.

General Technique.

288. Modified Corneal Incision with Iridodiolysis and Iridectomy for Opening the Anterior Chamber Angle.

F. C. PARKER. *Arch. Ophthal.*, 37, 277-281. March, 1947. 1 fig. 5 refs.

In a certain number of cases, a keratome section for iridectomy may damage Schlemm's canal. If the section is made anterior to this structure, it becomes difficult to carry out a good basal iridectomy. It is suggested in this paper that an incision with a von Graefe knife may be made straight through and across the cornea, about 3 mm. below the limbus, with the blade of the knife tilted slightly downwards to make a bevelled cut. This bevel makes it easier to introduce iris forceps, which grasp the iris well up towards the

base. It is drawn down through the incision, and cut off at one extremity, after being pulled medially from the end of the wound in order to prevent tissue becoming wedged in the incision, with a resulting anterior synechia.

This procedure has been carried out in thirty-five cases by the author, but no detailed histories are given. *W. J. B. Riddell.*

289. Endogenous Postoperative Ocular Infections. (Las infecciones oculares endógenas postoperatorias).

L. ORTIN. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 33-47. Jan., 1947.

The question of endogenous postoperative inflammation is discussed and three cases of cataract extraction are described, all followed by serious inflammatory reaction attributed by the author to endogenous infection. *H. M. Traquair.*

290. Applied Anatomy in Eye Surgery.

M. WIENER. *Surg. Gynec. and Obst.*, 84, 777-786. April 15, 1947. 17 refs.

An assortment of surgical details, operative techniques and guides to choice of operation. There are no sub-headings and some of the sentences need editing. Many useful points are mentioned, but greater care in their arrangement would have made the abstractor's task easier. *Seymour Philips.*

291. Eye Operations on the Deaf.

G. M. MANN. *Lancet*, 252, 767. May 31, 1947.

In this letter a plea is made for the more imaginative treatment of the totally deaf through a system of communication arranged before operation. *A. J. B. Goldsmith.*

292. War Surgery in Ophthalmology.

S. FOX. New York Soc. for Clin. Ophthal. Reported in *Amer. J. Ophthal.*, 30, 72-73. Jan., 1947.

An analysis is made of the first 500 operations performed at a military eye centre in 1944. Points in the technique of certain operations are also briefly noted. *A. G. Leigh.*

293. Panophthalmitis Following Iridencleisis.

P. M. LEWIS. Memphis Soc. Ophthal. and Otolary. Reported in *Amer. J. Ophthal.*, 30, 66. Jan., 1947.

The condition occurred in the left eye of a man aged 73 upon whom a bilateral iridencleisis had been performed 8 years previously. This is the author's only case of panophthalmitis following iridencleisis in 12 years' experience of the operation. *A. G. Leigh.*

294. Persistent Oedema Following Novocaine Injection.

J. W. MCKINNEY. Memphis Soc. Ophthal. and Otolary. Reported in *Amer. J. Ophthal.*, 30, 65. Jan., 1947.

Two patients who were operated upon on successive days for chalazia each developed an oedema of the upper and lower lids which persisted for about a month. The novocaine solution and the technique were the same in each case and no impurity could be found on analysis of the ampoules. *A. G. Leigh.*

Plastic Surgery.

295. Reconstruction of the Upper Lid.

E. B. SPAETH. *Surg. Gynec. and Obst.*, 84, 804-808. April 15, 1947. 10 figs.

The method used depends upon whether or not a sighted eye is present in the orbit, and upon the nature of the tissues which are deficient.

When a useful eye is present. Absence of conjunctiva must be made good by a free graft from the buccal mucosa, but if the skin is also missing a more elaborate technique is employed.

The surgeon has the choice of two different operations.

In the first the lash margins of upper and lower lids are excised and the lids split into anterior and posterior layers. Upper and lower posterior and upper and lower anterior layers are then united so that the eyeball is completely covered by continuous eyelid, except for a small area at the inner canthus left open for drainage. When the tarsorrhaphy has united, the lids are divided along a different line so that some of what was the lower lid now appears in the upper lid. Eyelashes may be suggested by tattooing.

Alternatively, a piece of buccal mucosa may be buried beneath the skin of the forehead or lower lid so that when the flap is cut it is already lined by mucous membrane and a complete eyelid can be transferred to its new site. Skin and mucous membrane can also be transplanted as a free graft, and this has been done after burying mucosa beneath the skin of the opposite upper lid.

When no eye is present. The inner lining of the lid may be skin instead of mucosa. The technique consists of burying a pocket of split skin in an adjacent site and rotating this flap, epithelialized on both surfaces, into the desired position at a later date.

Seymour Philips.

296. Contributions to Total Blepharoplasty.

I. CZUKRASZ. *Brit. J. Ophthalm.*, 31, 108-113. Feb., 1947. 11 figs. 1 ref.

In one case, where Hughes² method was used, both the lower lid and the remains of the upper lid were split to produce anterior and posterior layers, which were then sutured at different levels resulting in complete blepharorrhaphy. A new palpebral fissure was opened in 9 months. With Blaskovic's technique the conjunctiva of the upper fornix was mobilized and sutured to the skin of the lower lid. A bridge flap was cut parallel to the eyebrow and sutured to its edge, the gap so produced being closed by skin graft. In a third case the gap caused by the total loss of the upper and lower lids was covered by a sliding skin-flap on top of the remains of the bulbar conjunctiva, which produced the posterior layer of the lids. A new palpebral fissure was made at a later date.

John D. Fraser.

297. Reconstruction of Orbital Floor Defects.

A. E. SHERMAN. *Surg. Gynec. and Obst.*, 84, 799-803. April 15, 1947. 17 figs. 10 refs.

The floor of the orbit is thinnest in its posterior part, and injury therefore causes more severe damage posteriorly than anteriorly at the orbital rim. Fractures of the floor are usually caused by a severe blow on the eye and the displacement of the orbital floor is downwards.

The diagnosis depends upon a history of injury and the presence of enophthalmos. Diplopia may also be present. The diagnosis is confirmed by stereoscopic X-rays.

Treatment. The proper treatment is elevation of the fracture through the antrum as soon as the initial reaction has subsided. Where this is not done and the fracture is allowed to heal in malposition, the orbital tissues can be elevated by a variety of substances, including tantalum wool, cartilage or osteo-periosteal grafts. The author finds an acrylic wedge satisfactory, average size $2\frac{1}{2} \times 1\frac{1}{2}$ cms. and 8 mm. thick at the big end, and places it subperiosteally, thick end posterior.

Where there is a small loss of the bony margin of the orbit, this may be made good by a fascia lata graft, but larger defects are filled by a cancellous bone graft from the iliac crest. The ends of the graft are made to rest upon bare bone and soon become attached to it.

Seymour Philips.

298. Neutralization of Colour in Capillary Hemangiomas of the Face by Intradermal Injection (Tattooing) of Permanent Pigments.

H. CONWAY and J. P. DOCKTOR. *Surg. Gynec. and Obst.*, 84, 866-869. April 15, 1947. 6 figs. 13 refs.

A new method of decolourising port wine stains of the face is described by the authors. An electromagnetic machine carrying six needles injects suitable colours into the hæmangiomatous tissue, and by a suitable selection of colours the disfigurement can be abolished. They claim that no anæsthetic is necessary, and an area of two to three square inches can be injected in one hour.

Seymour Philips.

299. A New Type of Basket Implant for Use after Enucleation.

N. L. CUTLER. *Surg. Gynec. and Obst.*, 84, 792-798. April 15, 1947. 13 figs.

If, after enucleation, the movement in the stump can be transmitted to the prosthesis, so that the latter moves instantaneously and fully with the other eye, the perfect result has been achieved. While this perfection has never yet been obtained, the newly-designed basket implant is some way towards it. The implant has a depressed area in its centre, into which fits a prolongation from

the posterior surface of the prosthesis, both articles being made of methyl methacrylate. Implants were also placed inside the sclera after evisceration but this method showed no advantage over the former and produced greater post-operative reaction. For operative details the reader is referred to the original article.

Seymour Philips.

XV. CONGENITAL DEFORMITIES

300. Cyclopia.

S. GARTNER. *Arch. Ophthalm.*, 37, 220-231. Feb., 1947. 10 refs. 14 figs.

Cyclopia is a congenital condition, incompatible with life, where the normal two eyes are replaced by a single median eye, or by partially fused double eyes, and the nose is absent, or replaced by a proboscis above the eye. Two cases are discussed, in the first of which a single median eye was present, while the second showed a fused double eye. Histological details are described and illustrated. It is demonstrated that in the absence of the pigment epithelium of the retina, development of both the choroid and the retina is deficient. A misplaced island of retina lying in the choroid was thought to be due to metaplastic development of retinal pigment epithelium.

A. G. Cross.

301. Arachnodactyly (Marfan's Syndrome) associated with Ectopia Lentis.

J. V. CASSIDY and C. B. MCFARLAND. *Amer. J. Ophthalm.*, 30, 469-473. April, 1947. 19 refs. 2 figs.

The clinical picture of Marfan's syndrome is that of a tall, thin person, having elongation of all long bones, including the metacarpals and phalanges. Muscular atrophy is present and congenital defects are found throughout the body. Ocular changes are seen in about 60% of cases and include ectopic lenses, miosis, iridodonesis, variation of intra-ocular pressure, divergent squint, myopia, coloboma of the lens, thickened lens capsule and megalocornea. Histological findings in the eye include megaloglobus, replacement of the dilator fibres of the iris by "pink staining substance", incomplete formation of the pigment cells of the pars iridica retinae about halfway between the iris border and the base of the ciliary body, faulty placement of the angle of the anterior chamber anterior to the canal of Schlemm, defective development of the circular muscle of the ciliary body, and elongation of the zonular fibres, allowing the lens to assume a spheroidal shape. There is a hereditary and familial tendency. A case is described showing typical arachnodactyly in a man of 52 years. His mother had had a similar condition as had two brothers and a sister from a family of eight children. The right

eye had a band-shaped opacity which showed golden yellow pigmentation, probably due to melanin, and was glaucomatous. The left eye had a dislocated lens, and detached retina. The lens was extracted but vitreous hæmorrhage prevented treatment of the retinal detachment.

A. G. Cross.

302. Buphthalmos in a Six Month Premature Infant.

D. WEXLER and A. KORNZWIEG. *Arch. Ophthalm.*, 37, 318-323. March, 1947. 6 figs. 1 tab. 4 refs.

During the spontaneous birth of a premature infant, the cornea of the right eye ruptured. The left eye was observed to be stony hard and the cornea milky white. The child only survived for a few hours, and both eyes were removed soon after death. The grandparents were first cousins, and had five surviving children, three with buphthalmos (two male, one female), one normal male and one normal female, who was the mother of the premature babe.

On microscopic examination, the right eye was normal in all respects, and the cause of the rupture of the globe was not determined. The left eye was uniformly enlarged in all diameters, the corneo-scleral junction was barely indicated, and the iris was adherent to the posterior surface of the cornea in its entire extent. It was much thinner than normal, but its development corresponded to that of the iris of a six month old foetus. There was a faint suggestion of Schlemm's canal on one side of the cornea, but not on the other. The ciliary processes were considerably flatter and fewer than normal. There was no evidence of retinal atrophy or compression of the layers. The optic disc showed early glaucomatous cupping.

The histological implications of these findings are briefly discussed.

W. J. B. Riddell.

303. Histo-Pathological Study of a Case of Choroideremia. (Hallazgo y estudio histopatológico de un caso de coroideremia.)

E. FORNES PERIS. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 134-138. Feb., 1947. 6 figs. 4 refs.

A marasmic infant two months old died. Lagophthalmic keratitis was present in each eye. On sectioning the eyes the tissues, apart from the corneæ, were found normal but the choroid was absent. The condition of the macular area is not specially mentioned. The case was definitely not merely coloboma of the choroid. The relationship of this rare anomaly to the development of the eye is discussed.

H. M. Traquair.

304. A Case of Congenital Vertical Shortness of the Lids, Combined with Tetrastichiasis.

J. LANDAU. *Brit. J. Ophthalm.*, 31, 219-223. April, 1947. 10 refs. 3 figs.

The "height of the lid" is the maximum distance between the lid margin and the centre of the eyebrow. The "vertical extension of the lids" is the maximal distance measured between the free lid margin and the centre of the eyebrow while the lid is held by the cilia and maximally stretched. The proportion between height and vertical extension of the lid is the co-efficient, which varies from 1.5 in infants to 1.9 in old people. When it falls below 1.5, deficiency of lid closure occurs. A case is described of congenital vertical shortness of the lids in which the coefficient was 1.24, and in which both upper lids showed four rows of well developed lashes. There was slight eversion of the upper lids particularly in their temporal portion. The probable origin of the abnormal lashes from the epithelial anlage, which usually forms the meibomian glands, is discussed.

A. G. Cross.

XVI. INJURIES

Radiational.

305. Solar Photophthalmia.

J. M. DWYER. *Med. J. Australia*, 1, 523-525. Apr. 26, 1947. 1 fig. 3 refs.

This paper details the difficulties encountered by the Australian motor transport columns in the War operating in tropical desert country at high altitudes over long distances. Each year during the hot dry season from mid-September onwards an epidemic of conjunctivitis appeared in which during the peak incidence a loss of 1,000 man-days per week was involved out of a total personnel of 1,250.

The conjunctivitis appeared to be a typical photophthalmia, coming on suddenly in the early morning hours with photophobia, lacrimation and congestion of the exposed bulbar conjunctiva; there was no purulent discharge or significant bacteriological findings. Occasionally superficial punctate lesions occurred in a horizontal band across the cornea.

Investigations were done on the ætiological factors. The effects of dust and hot dry draughts of air in the driving cabs were excluded. The roofed cabs gave adequate shade from the direct sun, but relief of the symptoms was obtained by painting the windows of the cabs with a strip of green paint so as to exclude the sky from view. The essential ætiological factor appeared to be radiation from the large solid angle formed by the extremely bright sky.

Stewart Duke-Elder.

306. Action Spectrum of Ultraviolet Keratitis.

G. CROGAN. New England Ophthal. Soc. Reported in *Amer. J. Ophthal.*, 30, 61. Jan., 1947.

The absorption spectrum of the cornea is largely determined by nucleoprotein (peak at $265\ \mu\mu$) while the action spectrum is determined by a photolabile substance with absorption shifted towards the higher wave lengths (peak at $288\ \mu\mu$). The transmission characteristics of various types of glass were measured for that portion of the spectrum responsible for keratitis. A. G. Leigh.

Chemical.**307. The Treatment of Lewisite and Other Arsenical Vesicant Lesions of the Eyes of Rabbits with British Anti-Lewisite (BAL).**

I. MANN, A. PIRIE and D. B. PULLINGER. *Amer. J. Ophthal.*, 30, 421-435. Apr., 1947. 12 figs. 9 refs.

The action of BAL in averting, aborting, or reversing the destructive effect of lewisite burns of the eye is most striking, and all the changes can be observed in the rabbit. Arsenic is known to combine with thiol compounds, and keratein contains two thiol groups. Each molecule of lewisite combines with two thiol groups, but on the other hand BAL readily combines with lewisite and thus competes with the tissue proteins for any lewisite present. BAL penetrates the tissue with great rapidity and the resulting compound of BAL and lewisite is harmless. The following findings were the results of experiments on 150 rabbits' eyes.

1. *Effect of BAL on the normal eye.* Continuous application for 15 minutes of a large amount of BAL in strengths from 5-20% is harmful, but a single drop of 30% BAL can be used with safety. In the subsequent experiments 10 and 20% solutions were used.

2. *Effect of lewisite on the normal eye.*—Two standard lesions were produced with lewisite droplets. The first was obtained by placing a drop of lewisite on the centre of the cornea and holding the lids apart for 15 minutes. These eyes were lost by shrinkage after a stage of vascularisation of the cornea. The second was obtained by allowing the rabbit to blink immediately after the application, thus spreading the lewisite over the cornea. Destruction here was more rapid and complete, the eye perforating before the stage of vascularisation. Lewisite leads immediately to gross œdema and ends by destroying every cell with which it comes into contact. It penetrates the tissue rapidly and exerts an almost immediate effect upon the intra-ocular tissues.

3. *Effect of BAL on eyes injured by lewisite.*—If a drop of BAL is inserted into the eye immediately after the insertion of one drop of lewisite, the eye recovers completely, leaving no scar. If the BAL is not inserted for 10 minutes after the lewisite the eye can still become normal after an interval.

The sequence of events in the cornea was as follows : if the BAL was inserted up to 4 minutes after the lewisite, the eye was inflamed and the cornea denuded for 24 hours. In two days the cornea was clearer and only the centre stained. On the fourth day the eye was open, bright and normal except for a small central depressed lesion. By the 25th day, this depressed area was almost reconstituted but 3 months elapsed before it disappeared to slit-lamp examination.

If the BAL was delayed for 5 minutes, the same sequence of events occurred with longer intervals and a mild iritis was also present. After a delay of up to 15 minutes, complete healing still occurred after a varying amount of corneal vascularisation had arisen and retrogressed. If, however, the BAL was delayed for 20-25 minutes, some of the changes were irreversible and healing occurred with vascular corneal scars. If the treatment was delayed for 45 minutes the changes were the same as if no treatment were given—the eye perforates and shrinks. Treatment must therefore be given in the first half hour and preferably in the first five minutes.

Alternative methods of applying BAL were tried and it was found that 20% BAL solution massaged on to the lid margin was effective and prevented destruction of the eye. BAL ointment also gave some good results when massaged on to the lid margins, but was less effective than the solution, and no method of lid application was as effective as dropping the solution into the eye.

Similar experiments were carried out after instilling other arsenical poisons into the eyes and BAL proved equally effective in neutralising these.

4. *Effect of BAL on eyes injured by a mixture of lewisite and mustard gas.*—20% BAL was tried in the treatment of a central corneal lesion caused by 50 : 50 lewisite and mustard gas. The eye recovered without iritis or vascularisation. If the treatment was delayed for even 5 minutes, corneal vascularisation occurred, which took about 6 weeks to clear, leaving empty vessels and a faint corneal nebula.

The authors think that BAL has no effect in combating mustard gas burns, and in a 50 : 50 mixture of this gas with lewisite, it neutralises the effect of the lewisite only. *Seymour Philips.*

308. *Surgical Treatment of Mustard Gas Keratitis.* (Une thérapeutique chirurgicale des kératites ypérites).

G. P. SOURDILLE. *Bull. et Mém. de la Soc. Franç. d'Ophtal.*, 59, 119. 1946 (pub. 1947).

The author considers mustard gas keratitis to be due to changes in the limbal circulation. Following the successful use of cadaveric conjunctival grafts in caustic burns of the cornea, he employed them in the case of mustard keratitis. He has achieved excellent results in the state of the cornea thereby. *A. Lister.*

Mechanical.

309. The Management of Nonmagnetic Intra-ocular Foreign Bodies.

H. E. THORPE. *Surg. Gynec. and Obst.*, 84, 809-822. April 15, 1947. 17 figs. 30 refs.

The increased use of alloys has caused a rise in the number of non-magnetic intra-ocular foreign bodies, but improved X-ray and other localization and better surgical techniques have made it possible to remove some of them.

The History often affords a valuable clue to the presence of a foreign body, and sometimes its nature may be inferred from similar particles removed from the lids. The possibility of a foreign body in the eye should always be remembered, and as the author says, "there are many cases on record dismissed with a pat on the shoulder which later turn up with siderosis, chalcosis, or cyclitis due to intra-ocular foreign body."

Examination. Both eyes must be examined completely and by every available method, and especially must the X-ray localization be undertaken by a radiologist having expert knowledge of this branch. Metallic and stone splinters are radio-opaque but glass and wood are not. Vogt's skeleton-free technique is useful for the anterior segment of the eye, and the eye may be proptosed by the injection of fluid behind it.

Comberg's method of localization by means of a contact lens with limbal markings has been found useful and with this in position, postero-anterior pictures are taken with the patient prone, and then lateral with the patient lying on the affected side and looking at a fixed mark on the wall. From these pictures the position of the foreign body may be determined with the aid of Comberg's localization chart.

To determine whether or not the intra-ocular foreign body is magnetic the Berman locator is used and is also useful in deciding whether or not the foreign body has moved at all after application of the magnet.

Procedure. Glass and stainless steel do not cause ocular irritation as a rule, nor does aluminium, but brass, copper and zinc should be removed.

The removal of all irritating non-magnetic foreign bodies should be attempted if one can avoid excessive mutilation of the globe in doing so. Obviously if operation seriously threatens the integrity of the eyeball, nothing is to be gained by performing it. Having all the facts in his possession the surgeon must judge whether it is better to leave the foreign body in situ or remove it.

Prophylaxis. Injection of 15-30 million typhoid bacilli intravenously is a useful pre-operative prophylactic against infection. The subconjunctival injection of penicillin in normal saline is also helpful.

Anæsthesia. Sedative 1 hour before operation. Pontocain drops in the conjunctival sac. Retrobulbar injection of novocain and adrenalin, and also into the superior rectus and subconjunctivally. Akinesia of facial nerve.

Corneal foreign bodies. If very deep in the pupillary area, a narrow keratome is introduced through the cornea and anchored on the other side so that the keratome blade lies beneath the foreign body. The corneal layers are then incised and the foreign body removed. Alternatively, a Reverdin needle may be introduced through the cornea and used to exert counter pressure on the foreign body from inside the anterior chamber.

Foreign bodies in the Anterior Chamber. Small particles of glass, coal and inert solids do not usually require surgery, but copper and brass must be removed. The Berman locator is used in every case by the author to decide whether or not a foreign body is magnetic. The corneal incision should be posterior to the foreign body. The particle is grasped with forceps and removed. Any prolapsed iris is replaced and the anterior chamber refilled with saline to prevent anterior synechia.

Angle of Anterior Chamber. Usually in lower half owing to gravity and may be seen by gonioscopy.

Operation: Limbal incision several millimetres to the side of the particle, which is prised loose with an iris hook and removed with forceps.

Iris. When firmly enmeshed a small portion of iris must be removed with the foreign body.

Posterior Aqueous Chamber. Operation: Conjunctival flap and entry into anterior chamber ab externo with Lundsgaard's knife. Iridodialysis is performed by holding the iris up and cutting at its attachment with pointed scissors. Forceps are then introduced to remove the foreign body. Great care must be taken to avoid injury. If the iridodialysis is large, a thin strand of iris stroma may be incarcerated in the wound.

Lens. The customary practice is to await complete maturing of the cataract and then perform intra-capsular extraction. Donovan has removed the foreign body successfully by traction exerted through a 19-gauge hypodermic needle.

Ciliary Body or Choroid. The sclera is exposed 4-6 millimetres behind the localized spot. A meridional incision is attempted to come down over the foreign body, the sclera being held aside by silk sutures. The particle is grasped when it comes into view, though the ciliary body may be incised before this happens.

Vitreous Chamber. Two methods are in use for removal of magnetic foreign bodies from the vitreous chamber.

1. *By ophthalmoscopic view.* The localized site is marked on the sclera with gentian violet and surrounded by surface coagulations. Incision in sclera is in the shape of capital I or T. The uvea is incised with the cutting diathermy. If the foreign body does not present itself in the incision it is viewed with the ophthalmoscope and extracted with the author's vitreous chamber forceps.

2. *Ophthalmic Endoscope.* Approach between any of the recti muscles, marking localized site with gentian violet and surrounding the mark with surface diathermy. The instrument is inserted through a 7 mm. meridional incision, and through it the surgeon sights the foreign body and grasps it with the contained forceps. The author has used this instrument in 5 cases, and for details of the instrument, its sterilization and use, the original article should be consulted. The other methods of removing nonmagnetic particles from the vitreous chamber are by transillumination and with the aid of the biplane fluoroscope.

Optic Nerve. Foreign bodies in the nerve head may be removed with the ophthalmic endoscope.

Sclera. Scleral foreign bodies do little damage unless they project, in which case they should be removed.

Post-operative Treatment. Special measures are taken against infection, the eye dressed daily if iritis or cataract is present and atropine instilled. Corneal wounds are kept lying flat for 48 hours and scleral wounds for one week. *Seymour Philips.*

310. **Statistical Study of 418 Cases of Penetrating Injuries of the Eye Treated at the Hotel-Dieu Ophthalmic Clinic during the period 1940-1945.** (*Étude statistique de 418 plaies pénétrantes du globe oculaire traitées à la Clinique ophtalmologique de l'Hôtel-Dieu, de 1940 à 1945.*)

P. DESVIGNES and C. BOUDON. *Arch. d'Ophthal.*, 7, 28-50. 1947. 7 refs.

The authors give a very detailed account of a large number of injuries which came under their care during the period 1940-1945.

In their experience the nature of the trauma is the essential factor governing prognosis. They regard the extent and nature of the wound as being far more important than the site. For example, in comparing corneal wounds with wounds of the ciliary region, they found that the site of the wound did not make any material difference in regard to whether or not useful vision was retained, the outcome depending on the length of the wound and the degree of injury to deeper structures.

The authors do not think that infection is an important factor since it tends to occur in severe wounds in which the trauma caused by the initial injury (such as extensive prolapse of uveal tissue, loss of lens matter or vitreous) is the factor which so often produces

damage incompatible with conservation of the globe. The use of sulphonamides and penicillin in hospital did not seem to affect the outcome, but they feel that chemotherapy, used as a first-aid measure for such injuries, might well influence matters in a favourable manner.

Delay in reporting for treatment seemed a common occurrence, either from negligence on the part of the patient or from ignorance on the part of the patient's own doctor.

This report is well worth detailed study.

G. I. Scott.

311. *A Contribution to the Knowledge of Ocular Siderosis and Posterior Degenerative Pannus.*

A. LOEWENSTEIN and J. FOSTER. *Amer. J. Ophthalm.*, 30, 275-288. March, 1947. 15 figs. 10 refs.

The authors report a patient aged 40, first seen by them in 1935, whose left eye had been wounded by a steel splinter 12 years previously. The patient stated that the fragment was removed by operation after the accident. The eye showed signs of siderosis and the vision was accurate light projection. He was seen again in 1945 by which time the eye was inflamed, a hypopyon was present, the iris was tremulous and the lens had disappeared. The eye was excised and fixed in formalin. Section of the eye revealed a shrunken lens floating freely in the vitreous and a foreign body was embedded just posterior to the ciliary body 6 mm. from the limbus.

Slit-lamp examination of the posterior half of the opened eye showed the presence of cysts at the macula and narrowed retinal vessels. Bowman's membrane was marked by granules which stained with Perl's Prussian blue reaction, showing that the granules contained iron. The corneal corpuscles, Descemet's membrane and the endothelium were iron-free. Prussian blue particles were found in the macrophages taken from the hypopyon, and were also present in the reticulum cells round Schlemm's canal.

Iris. The whole iris was inflamed and there was extensive blue staining in the area between the pigmented layer and the dilator fibres.

The ciliary body showed less inflammation than the iris and contained many blue staining fibroblasts.

Lens.—The anterior capsule was extensively split and the zonular fibres had almost entirely disappeared. The substance of the lens consisted of a loose, purple stained granular mass with brownish masses between the capsule and the epithelium.

Macula.—The cystic area at the macula was practically iron-free. The macular area was full of exudates most marked in the internuclear layer and expanding the retina to twice its normal thickness. The normal structure of the retina was considerably altered by these exudates and the macular ganglion cells were sparse and of great size.

Retina.—The neuro-epithelium was mostly absent and the retina and choroid were fused together peripherally. Iron staining showed very little iron in the posterior part of the retina. The more peripheral the retina, the more degenerate it became and the greater the iron content. A band-like formation was noted on the outer retinal surface, which was limited to the retinal periphery and showed no evidence of a lumen or blood cells. The distribution was reminiscent of a vascular system and the authors conclude that it was a posterior pannus, the vessel walls of which had completely degenerated.

Choroid.—Except for isolated choroidal chromatophores there was very little iron staining in the choroid, and this was true even where the retina and choroid were fused together. Bruch's membrane was complete.

Optic nerve.—There was no iron staining in the optic nerve.

The authors remark on the strange fact that Descemet's membrane was iron-free, while Bowman's membrane had stored it. If the iron is dissolved by the aqueous humour, one would have expected the reverse to be the case.

It is evident that during the 22 years that the foreign body was embedded in the eye, parts of it were dissolved by the intra-ocular fluid and certain of the eye tissues were saturated with iron. The distribution of the iron in the eye gives some pointers towards the circulation of fluids within the normal eye. *Seymour Philips.*

312. **Review of Contributions of World War II to Ophthalmology.** R. J. HESSBERG. New York Soc. for Clin. Ophthal. Reported in *Amer. J. Ophthal.*, 30, 75-76. Jan., 1947.

Eye injuries should be sent to eye departments in rear hospitals for treatment: a delay of 48 hours in the extraction of an intra-ocular foreign body is less dangerous than the lack of skilled care: the method of choice for the removal of an intra-ocular foreign body is by the posterior route, following accurate localization by X-rays: corneal wounds, unless gaping, are best treated by direct suture rather than with conjunctival flaps: severely damaged eyes should be enucleated with the least possible delay, evisceration being used only in purulent endophthalmitis: care must be taken to protect the dura mater when the orbit is injured: plastic reconstruction is necessary following defects of the face, socket, and eye-lids.

A. G. Leigh.

313. **A Case of Traumatic Iridodialysis Treated by Operation.** E. J. SOMERSET. *Ind. Med. Gazette*, 82, 75-76. Feb., 1947. 5 figs. 4 refs.

A large iridodialysis from 1 to 5 o'clock was repaired. Under a conjunctival flap a keratome incision was made in the sclera 1.5 mm. from the limbus at 3 o'clock. The torn root of the iris was pulled

into the incision and adhered between the two edges of the sclera. No stitch was necessary except one in the conjunctiva.

E. J. Somerset.

314. The Treatment of Intra-Ocular Foreign Bodies.

W. J. W. FERGUSON. *Practitioner*, 158, 400-405. May, 1947. 3 figs.

A short essay on the treatment of intra-ocular foreign bodies written for the general practitioner, discussing diagnosis and treatment and the complications that may arise. It is pointed out that the prognosis as regards vision depends upon the presence or absence of infection and upon the degree of damage done to the eye. The essence of successful surgery must be to ensure that in the removal of a foreign body operative treatment is so planned as to minimise additional damage to the eye.

The article contains no new matter.

Stewart Duke-Elder.

315. Foreign Body Localization. The Ring Method.

E. J. SOMERSET. *Ind. Med. Gazette*, 82, 50-53. Feb., 1947. 12 figs. 2 refs.

A general description of the method.

The author considers the method to be one of great accuracy and quotes several cases in support of this. An additional advantage is that the surgeon can see from the X-ray film whether good centering was obtained at the time of taking the picture.

E. J. Somerset.

316. Removal of Corneal Foreign Bodies by Means of a Dental Drill.

M. C. COLENBRANDER. 110th Meeting Netherlands Ophthal. Soc., June 16, 1946. Reported in *Ophthalmologica*, 113, 247. April, 1947.

A dental drill of appropriate size, spun between thumb and finger, is an excellent weapon for removing corneal foreign bodies, rust-stains, etc.

A. J. B. Goldsmith.

317. Diathermic Treatment of Injuries of the Ciliary Body. (Ancora sul trattamento diatermico delle ferite del corpo ciliare.)

F. ORZALESI. *Boll. d'ocul.*, 26, 81-86. Feb., 1947. 2 figs.

Treatment of 3 cases of perforating wounds of the globe with diathermy of the uvea prolapsing into the wound. Good immediate post-operative results.

C. Guiseppe.

XVII. CONJUNCTIVA.

318. Investigation of Epidemic Eye Diseases in Fiji.

W. J. HOPE-ROBERTSON and L. S. TALBOT. *N.Z. Med. J.*, 46, 122-129. April, 1947. 2 refs.

In January of 1945, as a consequence of a mistaken report that 40% of N.Z. personnel brigaded in Fiji showed early trachoma, the authors went to Fiji to investigate, and found no evidence of trachoma amongst the troops.

Using a corneal microscope, they examined 115 selected white servicemen, 30 Fijian servicemen, and 30 white residents of Fiji, and describe in detail the appearances found. In nearly all of the group of white soldiers and in two-thirds of the residents they noted fine epithelial changes in the upper tarsal conjunctiva, and varying

degrees of papillary hypertrophy along the upper margin of the tarsal plate. No signs of early pannus were found.

The authors found evidence of trachoma amongst the natives of Fiji and make a number of recommendations to guide the administration of military ophthalmic service in areas where infectious or contagious eye diseases are endemic.

H. Coverdale.

319. Stevens-Johnson Syndrome.

W. G. SEARS. *Lancet*, 252, 427. March 29, 1947.

In a letter the author reports two cases, boys of 10 and 14 respectively. The first is of special interest in that he had a recurrence after one year. Both were typical moderate cases, eyes, mouth and skin of the limbs and genitals being affected. The skin lesions consisted of central bullæ surrounded by red, pale and reddish-blue zones, and varied in size from a large pin head to an inch in diameter. In both cases there were no sequelæ. The author suggests that the syndrome is a severe manifestation of erythema multiforme or erythema iris.

A. Lister.

320. Four Cases of Tuberculosis of the Conjunctiva.

B. FOSS. *Nordisk Medicin*, 33, 690-694. Feb., 1947. 15 refs.

The author reports 4 cases of this rare disease with exhaustive case histories. In 1 case (female, 26 years old) tubercle bacilli were demonstrated in the secretion from the conjunctiva. This case ran a lethal course (miliary tuberculosis). The clinical picture was of the well-known type with ulceration, hypertrophy and nodules of the conjunctiva. 3 cases presented simultaneously enlarged regional lymphatic glands. The case without enlarged glands (male, 48 years old) had a typical lupus of the skin of the face. This case was the only one with disease of both eyes. The pathogenesis, but not the treatment for the conjunctival affections, are discussed in brief.

E. Godtfredsen.

321. Treatment of Trachoma with Ultra Violet Light. (In Turkish).

B. KOSEBAY. *Dirim*, 1-2, 15-16. Jan.-Feb., 1947.

The author reports the use of ultra-violet light on the blind eyes of six patients with trachoma, stage II; each of them had one good eye. Everting the lids and keeping the exposed area 30 cm. distant from the tube, he used 6 applications at 3-4 days intervals. The exposures were increased from 3 to 10 minutes. 4 days after the last exposure, 2 cases actually healed and in the remaining 4 the granulations diminished.

C. Orgen.

322. Epithelioma of the Bulbar Conjunctiva. (Epitelioma de conjunctiva bulbar.)

R. A. A. LUNA. *Rev. Espan. Oto-Neuro-Oftal. y Neurocir.*, 6, 15-16. Jan.Feb., 1947. 1 fig.

Case report.

Stewart Duke-Elder.

323. Pink Disease: A Review of 65 Cases. T. N. FISHER.

Vide abs. 482.

324. Solar Photophthalmia. J. M. DWYER.

Vide abs. 305.

XVIII. CORNEA

325. Filamentary Keratitis: Is it Infectious in Origin? (La kératite filamenteuse est-elle d'origine infectieuse?)

R. BENNER. *Ann. d'Ocul.*, 180, 140-141. March, 1947.

Two cases are described, both in women of age unspecified; no general clinical details are given. On the ground that they improved on treatment with penicillin, both are alleged to be due to infection.

A. J. B. Goldsmith.

326. Contribution to the Knowledge of "Epidemic Kerato-Conjunctivitis." (Ulteriore contributo alla conoscenza della cosiddetta "cheratocongiuntivite epidemica.")

G. PASCA. *Boll. d'Ocul.*, 26, 54-64. Jan., 1947. 11 refs.

A general article based on observation of 1,000 cases. Attempts to reproduce the infection experimentally in animals failed.

!C. Guiseppe.

327. Cases of Intra-Corneal Hæmorrhages. (In Turkish.)

S. GÖRDÜREN. *A. U. Tip Fakültesi mecmuası*, 1-2, 95-99. Jan., 1947. 5 figs. 2 refs.

The author believes that cases of intra-corneal hæmorrhages (blood staining of the cornea) due to traumatism and contusion of the eye are not frequent. He has observed and followed the evolution of three cases, one of which occurred after cataract operation and the other two after contusion. In spite of all treatment, opacities remained in the deep layers of the cornea and vision was much disturbed.

S. Gördüren.

328. Blood Staining of the Cornea.

W. A. MANSCHOT. *Ophthalmologica*, 113, 203-214. April, 1947. 4 figs. 12 refs.

A review of the literature and a clinical and pathological study of five cases. Blood staining of the cornea is not always disciform, but may be ring-shaped; it occurs only after trauma or glaucoma and is probably preceded by damage to the endothelium. In the early stages the blood substance in the cornea is amorphous, and it is only after a few days that the typical refractile granules develop; these are digested by trypsin and are therefore probably crystalline hæmoglobin protein derivatives. As well as these, hæmosiderin and lipofuscin are also found in the cornea.

A. J. B. Goldsmith.

329. Corneal Lesions in Hodgkin's Disease. Report of a Case.

P. MATTEUCCI. *Amer. J. Ophthalm.*, 30, 136-142. Feb., 1947. 2 figs. 33 refs.

A woman of 27 developed Hodgkin's disease which was observed to run its usual course of remissions and relapses for more than

five years. Early in the fourth year she developed keratitis in both eyes of which the cardinal features were:—in the right eye an area of superficial patchy infiltrations over which the epithelium was roughened and showed punctate erosions; in the left eye similar changes, but more intense, so that the whole thickness of the cornea became affected in one place, and there was superficial and deep vascularisation. Both corneæ were hypoæsthetic. The keratitis persisted with remissions and relapses—new foci of infiltration appearing—for over 18 months, but on the whole tending to improve when last seen. General improvement in response to X-ray therapy was noticeably reflected in the corneæ.

The author quotes other reports of lesions of the visual apparatus in Hodgkin's disease affecting the cornea, orbit, lacrimal gland, eyelids, conjunctiva and fundus. He is impressed by the resemblance of his case to herpes simplex corneæ. He considers that this falls into line with the view that Hodgkin's disease is due to a virus or ultra-virus, implying that the virus of Hodgkin's disease occasionally attacks the cornea. This also he considers is supported by evidence that the cornea may contain reticulo-endothelial elements and Hodgkin's disease shows a conspicuous predilection for structures wherein the reticulo-endothelial system is particularly represented. Moreover, as he points out, herpes zoster occurs in cases of Hodgkin's disease with a significant frequency. [Neither the keratitis he describes nor those he quotes were characteristic of zoster of the corneæ.]

A. Lister.

330. Lipid Dystrophy of the Cornea.

S. FRANKEL and J. SCHNEIDER. N.Y. Acad. Med., Section of Ophthal., Oct., 1946. Reported in *Arch. Ophthal.*, 37, 254-255. Feb., 1947.

This is characterized by a deep interstitial fatty and cellular infiltration of the corneæ. The course is chronic and painless, and both eyes are usually involved. The primary type is caused by a local disturbance and is associated with systemic disturbance of lipid metabolism, whereas the secondary type is a degenerative change in long standing disease of the corneæ. Two cases are described, in which the blood cholesterol was normal. One case of this type has been described treated successfully by keratoplasty.

A. G. Cross.

331. Pathology and Treatment of Fistula Corneæ.

A. W. M. HOUWER. *Ophthalmologica*, 113, 309-315. May, 1947. 5 refs.

The author argues that the failure of the classical methods of treatment of corneal fistula results from their being based on misconceptions as to its cause. He considers that it is a safety valve in an eye that has developed glaucoma as the result of a perforating

ulcer, and that treatment of the glaucoma preferably by cyclodialysis will result in cure of the fistula. He quotes 17 cases; 10 of these were treated by operation on the fistula with only two cures. The other 7 were treated by iridectomy (one case), or cyclodialysis (six cases); all were cured.

A. J. B. Goldsmith.

332. Use of Frozen-dried Cornea as Transplant Material.

I. H. LEOPOLD and F. H. ADLER. *Arch. Ophthalm.*, 37, 268-276. March, 1947. 3 figs. 11 refs.

Corneal tissue kept in Ringer's solution or in isotonic sodium chloride solution at a temperature of 3° C. must be used within three days in order to obtain satisfactory results. As the supply of fresh donor corneae is becoming less than the demand, the investigations on rabbits described in this paper were designed to determine the value of frozen-dried material. The material for transplantation was excised with a double-bladed knife or a trephine. Further samples were either cut into four to five millimetre squares or the entire cornea was frozen. The excised pieces were immersed directly either into liquid hydrogen (-195° C.) or into isopentane (-159° C.) The frozen pieces were then placed in cooled vials connected with a vacuum pump. Evacuation was continued for four or five days at a constant temperature of -38° C. and for an additional day at +20°. This treatment removes all moisture from the frozen tissue. The transplants were used within ten days to three months after dehydrating, freezing, and vacuum packing. The frozen tissue was rehydrated by breaking off the tip of the vial immersed in saline solution, serum or aqueous humor. No differences in the degree or speed of rehydration was observed between any of these solutions. The frozen-dried transplants healed in fifty-nine of the seventy-five operations. In nineteen corneae, vascularisation occurred. There were six cases infected, and in nine corneal oedema persisted.

Histological studies showed that rehydration of the frozen-dried tissue differed from the normal in that the nuclei were pyknotic and the stroma was slightly thickened. The epithelium was reduced to only two layers, and the endothelium was intermittently present. No increase in nuclear content of the stroma nor accumulation of inflammatory cells was seen.

Not one of the successful frozen-dried grafts was transparent at any time during the six months of observation. All the grafts were opalescent or bluish-grey, in spite of the various rehydrating fluids employed. This suggests that there is some change in the graft itself which must be of a form which did not interfere with the healing of the graft, nor did it incite any undue inflammatory reaction in the host. It may be that the disturbance of the epithelium

and the endothelium is responsible for the failure of the graft to recover transparency.

The evidence is not complete as to whether the transplanted corneal tissue persists, or whether it acts as a framework into which surrounding corneal tissue grows. Some workers maintain that successful transparent grafts maintain their individuality, and that the opaque nebulous grafts are ones that have been invaded by host tissue.

Certain studies indicate that grafts preserved in formaldehyde are replaced by host tissue. The majority of the serial sections of the frozen-dried corneal transplants suggests that new tissue from the surrounding cornea was replacing or had replaced the transplanted tissue.

W. J. B. Riddell.

333. Histological Examination of a Clear Corneal Graft; the Behaviour of Nerves. (Examen histologique d'une greffe cornéenne transparente; le comportement des nerfs.)

A. FRANCESCHETTI and J. BABEL. *Ann. d'Ocul.*, 180, 142-145. March, 1947. 7 figs. 7 refs.

The eye was obtained after death from a man of 32; the graft had been performed 6 years previously for a vascular leucoma following a perforating corneal ulcer. The general structure of the graft was that of the normal cornea with the exception that the epithelium was thinned. Neither vessels nor nerves had spread from the surrounding cornea to the graft, with the exception of one fine subepithelial nervous filament. It is concluded that innervation is secondary to vascularisation and is suggested that epithelial innervation may be necessary to preserve clarity through some trophic influence.

A. J. B. Goldsmith.

334. Formation of Capillaries and other Tissue Changes in the Cornea of the Methionine-deficient Rat. J. L. BERG, E. R. PUND, V. P. SYDENSTRICKER, W. N. HALL, L. L. BOWKLES, and C. W. HOFF.

Vide abs. 481.

335. Retinal Choroiditis of Jensen Associated with Parenchymatous Keratitis. M. FOCOSI.

Vide abs. 352.

336. Leucoma Adherens and Glaucoma. A. W. M. HOUWER.

Vide abs. 381.

XIX. ANTERIOR CHAMBER

337. Persistent Hæmorrhages in the Anterior Chamber. (Hemorragias Persistentes en la Camara Anterior.)

G. CRESPI. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 23-31. Jan., 1947. 4 figs. 15 refs.

Four cases of persistent hæmorrhages into the anterior chamber are described, three of which followed operation, and all of which were associated with pre-existing degenerative lesions of the iris.

H. M. Traquair.

XXI. UVEAL TRACT

338. The Influence of Hypersensitivity on Endogenous Uveal Disease.

A. C. WOODS. (The Jackson Memorial Lecture) *Amer. J. Ophthalm.*, 30, 257-288. March, 1947.

Two definite forms of hypersensitivity are recognised—the anaphylactic state, and hypersensitivity to infection. The anaphylactic reaction occurs rapidly when a foreign protein is brought into contact with sensitized tissues and is characterised by œdema, increased capillary permeability, congestion, hæmorrhage, and spasm of smooth muscle. Specific precipitins occur in the body fluids and the hypersensitivity can be passively transferred. It does not produce *per se* necrosis of the tissue cells. Necrosis, which may occur following the repeated injection of small quantities of foreign protein, is due to interference with the blood supply and not to the direct effect of the antigen upon the tissue cells. The hypersensitivity to infection—bacterial hypersensitivity—can be induced by the parenteral contact of the tissues with living or dead bacteria, fungi, or filterable viruses, but not by any soluble antigens so far extracted from micro-organisms. Once hypersensitivity is established, however, reactions may be elicited by the injection of soluble bacterial proteins. The bacterial type of hypersensitivity is produced only by the introduction of whole bacteria to the tissues; it cannot be passively transferred, and precipitins do not appear in the blood. Following the introduction of bacteria or their soluble products to the sensitized tissues there is a delayed response reaching a maximum in 24-28 hours resulting in a local, systemic or focal reaction. In extreme cases there is necrosis of the tissue cells from the direct action of the antigen on the cell body. Anaphylactic and bacterial sensitivity may occur together in the same individual, anaphylactic sensitivity developing to the soluble products of the bacteria. Immunity or the increased resistance of the tissues to infection is dependent upon the circulation of antibodies in the blood and the action of phagocytic cells, and although acquired immunity and acquired hypersensitivity tend to develop together in the infected body, they are independent one of the other.

The author applies the terms “non-granulomatous” and “granulomatous” to “serous” and “plastic” iritis respectively. Non-granulomatous uveitis is characterised by an acute inflammatory reaction, an out-pouring of serum, fine keratic precipitates and little tendency to the formation of posterior synechiæ. Such eyes recover with little residua, and it is only with recurrent attacks that organic damage results. The granulomatous type is characterised by a more insidious onset, “mutton-fat” precipitates, exudates on the anterior lens capsule, nodules on the iris and a marked tendency to the formation of posterior synechiæ.

Usually the clinical picture follows one or other pattern but in certain cases it would appear that both processes are present together. Both types are dependent upon the invasion of the eye at some time by bacteria. In the non-granulomatous type the invasion of the eye by small numbers of bacteria, or bacteria of low virulence, has been successfully combated by the bactericidal action of the ocular fluids, but the eye is left hypersensitive to bacterial proteins or the soluble bacterial products, so that when bacterial antigens again reach the eye, through reinfection or absorption from an infected focus, a hypersensitive reaction results. This type of reaction can be demonstrated experimentally in animals. In the granulomatous type of uveitis the organisms reaching they eye are not destroyed but remain viable in the ocular tissues and produce local lesions of the eye. The character of the resultant lesion is modified by the presence of hypersensitivity and general immunity. A bacterial type of sensitivity is produced by the presence of bacteria in the eye and if the proliferation of organisms continues then a reaction between the hypersensitive tissues and the bacterial products may result. The focal inflammation of a tuberculous eye following the systemic injection of excessive amounts of tuberculin is an example of such a reaction. Unless the proliferation of bacteria is restrained by the forces of immunity the hypersensitive reaction will be progressive and inflammation, caseation, necrosis and tissue destruction result. If there is natural or acquired resistance to the infection then the reaction will be minimal.

A. G. Leigh.

339. **Iridocyclitis as the Syndrome of the Disease of Besnier-Boeck.** G. F. ROCHAT. 110th Meeting Netherlands Ophthal. Soc. June 15, 1946. Reported in *Ophthalmologica*, 113, 230-233. April, 1947.

A general discussion of the empiricism of views on the ætiology of iridocyclitis. Two cases were shown ; in both cases there had been a long continued cyclitis, and in both there were present nodular masses, consisting of nests of epithelioid cells with a few giant cells, but without caseation. The microscopic appearance was said to be typical of Boeck's sarcoid. General clinical details of the patients are not given.

A. J. B. Goldsmith.

340. **A Case of Toxoplasmal Chorio-Retinitis.**

C. D. BINKHORST. 110th Meeting Netherlands Ophthal. Soc., June 16, 1946. Reported in *Ophthalmologica*, 113, 239-241. April, 1947.

Manifestations of the disease in children and adults are briefly described. Children typically show : (1) ocular anomalies, central choroido-retinitis, microphthalmos, etc. ; (2) encephalitic phenomena ; (3) calcified cerebral deposits. The case was shown of a girl aged 6 showing all these characteristics ; inoculation of her

C.S.F. into guinea pigs and mice resulted in the infection of these animals by organisms, probably toxoplasma.

[This case is interesting as being the first recorded in Europe, and as having run a chronic course in extra-uterine life. It is stated that, in all, only some 18 cases of toxoplasmal infection have been recorded.]

A. J. B. Goldsmith.

341. Meningeal Reactions in Sympathetic Ophthalmia.

L. CORCELLE. *Brit. J. Ophthalm.*, 31, 366-372. June, 1947. 2 refs.

The author, who was the first to describe meningeal reactions in sympathetic ophthalmia, here describes three illustrative cases in detail. In all lumbar puncture showed a lymphocytosis with some aberrations from normal chemistry. He discusses the clinical features; headaches and deafness are common; vestibular dysfunction and pyrexia are less frequent; lumbar puncture shows a lymphocytic meningitis the onset of which bears some [rather obscure] temporal relation to the date of appearance of signs in the sympathizing eye.

The author states that he has found the meningeal reactions in all [how many?] cases he has seen in the past ten years; he suggests that sympathetic ophthalmia may be allied to lymphocytic choriomeningitis and that his findings support the theory of a virus aetiology of the disease.

A. J. B. Goldsmith.

342. Ossification of the Choroid.

E. C. ELLETT. Memphis Soc. Ophthalm. and Otolary. Reported in *Amer. J. Ophthalm.*, 30, 63-64. Jan., 1947.

Report of a case in which ossification of the choroid was found in an eye that had been blind for 28 years.

A. G. Leigh.

343. A Very Large Spontaneous Cyst of the Iris.

A. BAKKER. 110th Meeting Netherlands Ophthalm. Soc. June 16, 1946. Reported in *Ophthalmologica*, 113, 238. April, 1947.

Case report. No pathological report.

A. J. B. Goldsmith.

XXII. RETINA

344. On the Elasticity of the Retina.

J. TEN DOESSCHATE and F. P. FISCHER. 110th Meeting Netherlands Ophthalm. Soc. June 15, 1946. Reported in *Ophthalmologica*, 113, 233-237. April, 1947.

The elasticity of the retina can be estimated by clamping it between copper plates with circular perforations and subjecting the retinal membrane thus formed to differences in hydrostatic pressure. The tensile strength of fresh retina thus tested is found to be 0.33 g/cm.; it gradually decreases as the time of testing after removal of the eye increases. It is suggested that the normal retina in the living eye is subjected to tension, but that its tensile strength is not normally

surpassed, and that it may be reduced in pathological conditions.

[As indicated in the discussion, there seems to be some confusion of thought as to possible clinical applications of these interesting estimations. In *in vitro* tests the retina bursts at the top of the most convex part with a flap-tear outwards. A similar condition cannot possibly obtain in the eye. Other criticisms are offered in the discussion—the factor of distension, the phenomenon of recrystallization after stretching, and possible differences in elasticity in different directions.]

A. J. B. Goldsmith

345. **Retinitis Proliferans and Tuberculosis.** (Retinitis proliferante y tuberculosis.)

G. RUIZ. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 226-230. March, 1947.

The author describes two cases of retinitis proliferans in young men. Both had tuberculosis and marked increase in the E.S.R. Both of them had had vitreous hæmorrhages previously with retinitis proliferans in both eyes.

The pathology of the condition is briefly discussed. It is suggested that the formation of the fibrous tissue is of hæmatogenous origin, and that there is strong evidence that in these cases the hæmorrhages are due to tuberculous infection of the vessels. The condition, however, can also occur in other conditions such as hæmophilia, anæmia, focal sepsis and glandular disorders.

E. E. Cass.

346. **The Ætiology and Treatment of Recurrent Vitreous Hæmorrhages in the young.** (Etiología y tratamiento de las hemorragias recidivantes del vítreo de los jóvenes.)

F. G. IGLESIAS. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 139-162. Feb., 1947. 38 refs.

This long paper consists of an examination of the literature of recurrent intravitreal hæmorrhage. The work of many authors on the causes, pathogenesis, and treatment is reviewed. The author concludes that recurrent intra-ocular hæmorrhage is a very complex syndrome. Among the numerous possible causes mentioned he regards as important factors tuberculous periphlebitis, blood conditions associated with defective coagulation, general and focal infections, endocrine disturbance, hypovitaminosis and obliterative thrombo-angiitis. Treatment depends upon the identification of the cause. In some cases physical and surgical measures give good results.

H. M. Traquair.

347. Anticoagulant Medication (Heparin, Dicumarol) in the Treatment of Thrombosis of the Retinal Veins. (La medicacion anticoagulante (heparina, dicumarol) en el tratamiento de las trombosis de las venas retinianas.)

A. P. PALOMAR. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 263-274. March, 1947.

The microscopical examination of eyes with venous thrombosis reveals only end-results in specimens which have been excised for secondary glaucoma. Although the study of such changes is of value, it does not give an exact picture of the formation of the thrombosis. The author suggests that the maintenance of the fluidity of the blood depends upon an equilibrium between three factors: vascular, circulatory, and hæmatogenous.

The vascular factor depends upon alterations in the vessel wall, such as endophlebitis due to acute infections, focal sepsis, syphilis, and tuberculosis. The circulatory factor is a slowing of the blood stream favouring thrombosis. This may occur particularly when the vein enters the lamina cribosa, at the venous bending at the level of the papilla and at the arterio-venous crossings. Circulatory stagnation also occurs if the venous pressure is nearly equal to the intra-ocular pressure, or in the slowing of the arterial blood stream in arterio-sclerosis. The hæmatogenous factor includes increased coagulability of the blood. This has not been discovered by the author in any case, although it has been alleged to play an important part in venous thrombosis.

The author points out that phlebitis is rarely seen before thrombosis has occurred. In cases where the cause of the phlebitis is thought to be infective, penicillin and sulphonamides, combined with anticoagulant treatment, are indicated, and where septic foci are present these must be treated. He points out the dangers of sudden lowering of hypertension when treating the circulatory factor.

The hæmatogenous factor, which is the least important in the production of the thrombosis, has recently been treated by new anticoagulants. The author discusses in detail the chemical properties and clinical applications of heparin: to be effective it must be given intravenously, but its action is variable. It is difficult to obtain in quantity, so that dicumarol, which can be produced synthetically, has been used instead. This drug is administered by the mouth, once or twice daily, the dose being 100-200 milligrams per day. Coagulation time rises rapidly after 36-48 hours. The pro-thrombin must not be less than 15-20% or large hæmorrhages may occur. Daily examinations are therefore necessary as well as tests of the capillary fragility, bleeding and clotting times. With these precautions, treatment may continue for several weeks.

In 1941 the author treated 4 cases of retinal venous thrombosis with heparin, 3 cases improved, but the fourth case, which had

diabetes, showed no improvement. In 1945 dicumarol was used in 14 cases, 8 cases of complete thrombosis, and 6 cases of one of the branches. In 2 cases the origin was probably infective, in 2, syphilitic, 7 cases were arteriosclerotic, and 1 was diabetic. Length of treatment varied from 15-40 days, with periods of rest. In only 2 cases were complications seen; 1 case commenced epistaxis and mæna 2 days after discontinuing the dicumarol and the prothrombin continued to decrease. In the second case the patient had refused to be hospitalized, and was difficult to control; bleeding occurred in the skin and gums, and hæmaturia was present. Vitamin K had no effect on either case. In the second case 4 blood transfusions were given.

In 8 cases of thrombosis of the central vein, only 2 cases showed no improvement. In all 6 cases of thrombosis of a branch the results were more marked, both visually and ophthalmoscopically. One case had a relapse a month later and another a central thrombosis 40 days later. The sixth case was unimproved.

In the author's opinion, it is difficult to assess the value of this drug as yet. Anticoagulants may prevent the formation or the increase of clot, but cannot liquidate it: their value is greatest in recent and incomplete thrombosis. Contra-indications are high hypertension, hæmorrhagic tendencies, gastro-duodenal ulcers, past jaundice, etc.

E. E. Cass.

348. The Relationship of the Ocular Blood Vessels to Endangiitis Obliterans. (v. Winiwarter-Buerger.)

A. E. SCHMID and A. v ALBERTINI. *Ophthalmologica*, 113, 129-142. March, 1947. 6 figs. 33 refs.

Endangiitis obliterans (Buerger) does not manifest itself in the ocular blood vessels. If they are affected it is usually secondary to affections of the internal carotid and its branches. The characteristic signs of endangiitis obliterans, i.e., stenotic changes, looked upon today as pathognomonic, are not present in the ocular blood-vessels. The secondary affections of the blood-vessels of the eye are seen in the form of thromboses, of connective tissue as a result of organization of thrombi, or of emboli and active and passive conditions of collapse. Clinically they appear as partial or total, temporary or permanent occlusions of blood vessels (emboli, thrombi) and vessel spasms with the usual accompaniments locally. The secondary eye conditions can appear before, with or after the cerebral affections. Retinal hæmorrhages are present occasionally. They differ from recurrent juvenile hæmorrhages into the retina and vitreous.

J. A. Magnus.

349. Hypertensive Retinitis. A. J. BEDELL.

Vide abs. 467.

350. Central Angiospastic Retinopathy.

M. A. ZELIGS. *Psychosom. Med.*, 9, 110-117. March-April, 1947. 19 refs.

Views as to causation given in the literature are reviewed. Four cases are reported in detail with notes of psychiatric investigations. It is stressed that in all cases intense anxiety played an important role at the time of origin of ocular symptoms. Spasm of retinal arterioles, it is argued, is brought about by psychophysiological mechanisms of anxiety or fear. *A. J. B. Goldsmith.*

351. Berlin's Oedema and Macular Hole. (Edema de Berlin y agujero de la macular.)

R. A. A. LUNA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 222-235. March, 1947.

The author discusses in some detail the theories of formation of Berlin's oedema, and also the formation of macular holes of traumatic and non-traumatic origin. No conclusions are given, and no new observations presented. *E. E. Cass.*

352. Retino-Choroiditis of Jensen Associated with Parenchymatous Keratitis. (Su di un particolare caso di retino-coroidite di Jensen e cheratite parenchimatosi concomitante.)

M. FOCOSI. *Boll. d'Ocul.*, 26, 1-6. Jan., 1947. 1 fig. 16 refs.

Description of a case of retinal choroiditis of Jensen with contemporaneous occurrence of parenchymatous keratitis in an individual affected by hereditary lues. *C. Guiseppe.*

353. A Case of Toxoplasmal Chorio-Retinitis. C. D. BINKHORST.

Vide abs. 340.

354. Pathogenesis of Retinitis Pigmentosa. (La pathogénie de la rétinite pigmentaire.)

E. REDSLOB. *Ophthalmologica*, 113, 290-302. May, 1947. 39 refs.

The author proposes to differentiate two forms of retinitis pigmentosa. The first is not hereditary and develops as the result of inflammatory processes such as syphilis, or following exanthemata. The author reports the case of a child aged 14 months who developed spasm of the central retinal artery as the sequela of a febrile reaction to vaccination. After six weeks almost complete blindness vision slowly improved, but 10 years later the fundus presented the typical picture of retinitis pigmentosa with visual fields reduced to 10°.

The second group of cases includes those of genetic origin where retinopathy may be accompanied by other lesions; the author thinks that probably the two groups differ in appearance and development. *A. J. B. Goldsmith.*

355. Associated Systemic Factors in Retinitis Pigmentosa.

I. GIVNER and M. BRUGER. *Arch. Ophthalm.*, 37, 261-267. March, 1947. 1 fig. 1 table. 19 refs.

A female patient with retinitis pigmentosa was found to have a spinal fluid pressure of 300 mm. of water; the normal range is

from 100 to 150 mm. A male patient suffering from the same disease was found to have creatinuria. These associated conditions led the authors to examine fourteen patients in order to establish the range of various physical and bio-chemical measurements. The serum cholesterol was within normal limits in seven patients and slightly raised in three. The basal metabolic rate was within normal limits in the majority of the subjects examined. In eight males and three females creatinuria was found. This finding is of interest owing to the increase in urinary excretion of creatine in cases of acromegaly. There is evidence that the pituitary gland is involved in the control of creatine metabolism. Pituitary dysfunction has been found in association with retinitis pigmentosa.

Physical examination of the patients was within normal limits, except for the presence of high arched palates and nerve deafness. Seven of the eight patients studied with audiometric tests had impaired hearing and two of the patients were deaf mutes. The laboratory data concerning the patients are presented in tabular form. No pedigree details are given. *W. J. B. Riddell.*

356. The Treatment of Retinitis Pigmentosa with Special Reference to the Filatov Method.

D. M. GORDON. *Amer. J. Ophthal.*, 30, 565-580. May, 1947. 39 refs.

The article is a survey of the heterogeneous collection of therapeutic artillery which has been levelled at retinitis pigmentosa over a period of many years, and a commentary on a preliminary study of the Filatov method. Some of the methods have been based on at least a theoretical pathogenesis of the disease, such as choroidal sclerosis, while others have been more fanciful.

Medical vasodilators which have been used include subconjunctival injections of saline, inhalations of amyl nitrite, miotics, nicotinic acid, retrobulbar atropine and acetyl choline, subcutaneous strychnine and oral pilocarpine.

Surgical measures directed at producing more permanent vasodilation have for the most part been attacks on the sympathetic system—such as stellate ganglionectomy, while the eye has been subjected to operations to lower the intra-ocular pressure.

More empirical have been the employment of hormones from the thyroid and pituitary glands, and the use of female hormones on the grounds that the disease is more common in males. Vitamins have also been given by various routes, for example, vitamin A on the grounds of its association with dark adaptation.

The story has always been the same, namely, success claimed by the originator of each method—often in far too small a series of cases, failure to obtain lasting improvement, or failure of other observers to repeat the success, so that “retinitis pigmentosa must still be classed as a hopeless disease”.

Filatov's method consists of intramuscular injections of specially prepared cod liver oil and subcutaneous and/or subconjunctival implantation of certain tissues taken from the dead (of non-infectious diseases) and allowed to stand for 6 to 7 days at 2° C. [It is gratifying to learn that the material is removed and stored under strictly aseptic precautions] This process is said to result in disintegration, and the liberation of "biogenic stimulation". The material includes liver, skin, placenta, spleen, cartilage, various parts of the eye, and also the leaves of various plants which are conserved in the dark. [Derrick Vail's quotation from the Witches' scene in Macbeth in an editorial on the subject in the same journal is most apt.]

The method is used for the treatment of almost every ocular disease, and is claimed to be beneficial not only to many of them, but also to the function of normal eyes. Retinitis pigmentosa is among the conditions in which improvement has been observed.

Though naturally sceptical of the Filatov method, both because of its panacea-like nature and of the unscientific presentation of its results, the author and other workers felt that claims backed by a man of Filatov's reputation could not be discounted without investigation. This is now in progress, particularly but not only with cod liver oil injections. The author does not attempt to give a survey of the work but only to comment on initial results and to give details of the cod liver oil technique. As a result of improvements, both subjective and objective, observed over a short period in a small series of cases a larger series is now being studied, and because of certain local and general toxic reactions to the cod liver oil which have occurred, allied substances such as carotene and various isomers of vitamins A, D and E are being experimented with. It is emphasized that it is not yet established if the improvements observed are actual or can be maintained. This can only be proved by further study and a warning is given against credulous enthusiasm.

A. Lister.

357. **Treatment of Retinitis Pigmentosa with Irradiation of the Ciliary Spinal Centre of Budge.** (Terapia della retinite pigmentosa con irradiazione del centro cilio-spinale di Budge.)

S. JONA and R. CAMERINI. *Riv. Oto-Neuro-Oftal.*, 22, 66-84. Jan.-Feb., 1947. 12 figs. 13 refs.

A general article discussing the ætiological significance of spasm and other vascular changes in retinitis pigmentosa. The authors observed a small improvement in the visual field in 5 cases out of 7 treated with X-ray irradiation of the ciliary spinal centre of Budge. In their opinion, the results are due to a resolution of vascular spasm by means of sympathetic inhibition determined by X-ray therapy. This therapy is preferred to neuro-surgical sympathectomy.

C. Guisepe.

358. Retinoblastoma.

E. C. ELLETT. Memphis Soc. of Ophthal. and Otolary. Reported in *Amer. J. Ophthal.*, 30, 62-63. Jan., 1947.

A boy of 8 months developed signs of acute inflammation of the right eye; the left eye was normal. The condition improved under treatment with sulphanilamide, but in a day or so a considerable hyphæma developed causing blood staining of the cornea. The eye quietened and became soft; no view of the fundus was obtained. A year later a retinoblastoma was found in the left eye; no signs of inflammation were present in this eye. Several weeks later the right eye again became inflamed, and orbital cellulitis developed. The eye was enucleated and it was found that a retinoblastoma had extended through the sclera and invaded the orbit. The child died three months after the removal of the second eye. *A. G. Leigh.*

359. True Glioma of the Retina.

A. HUGGERT and G. T. HULTQUIST. *Ophthalmologica*, 113, 193-202. April, 1947. 4 figs. 41 refs.

The patient, a man aged 77, had had symptoms in his left eye for 20 years; the eye had been blind for a few years, and painful for two weeks. When removed the globe was found to be full of tumour which on section and silver impregnation proved to be an oligodendroglioma. The histological picture differed somewhat from similar brain tumours in that mitoses were frequent and there were large areas of necrosis. *A. J. B. Goldsmith.*

360. The Inheritance of Retinoblastoma. H. F. FALLS.
Vide abs. 213.

361. Treatment of Retinal Detachment.

T. COLLYER SUMMERS. *Med. Press*, 109, 187-190. March 12th, 1947.

After a brief survey of the older methods, the author describes his technique of treating simple retinal detachment. The position of the retinal hole in relation to the sclera is determined by indicating the meridian on which the hole lies by marking at the limbus two diametrically opposed points which are in line with the hole; the position of the hole on this meridian is determined by estimating the distance in disc diameters of the hole from the ora serrata. The hole is sealed by repeated perforations with a $\frac{1}{2}$ mm. needle, using a current of 35 ma. By this method the reaction produced by the current is more certain than by surface diathermisation. Following perforation the sub-retinal fluid is evacuated by suction. Postural treatment and absolute rest are required for at least two weeks following operation. *A. G. Leigh.*

362. Pathogenesis of the Læsis Ganglii Fasciculi Optici.

J. DE RUYTER. *Ophthalmologica*, 113, 276-279. May, 1947. 4 refs.

By this name the author prefers to call those conditions generally described as retrobulbar neuritis due to toxins and avitaminosis, and

the optic atrophy of tabes. He argues that the primary lesion is in the multipolar ganglion cells of the retina, and ascribes it to a lack of ascorbic acid or other vitamins with consequent breakdown of the redox-reactions governing cellular respiration.

A. J. B. Goldsmith.

XXIII. OPTIC NERVE

363. Amblyopia due to Dietary Deficiency. A. D. BEAM.
Vide abs. 477.

364. Primary Tumour of the Optic Nerve.

W. J. HOPE-ROBERTSON. *N.Z. Med. J.*, 46, 210-215. June, 1947.
3 figs. 17 refs.

The author gives a general outline of primary tumours of the optic nerve with special reference to the course, signs, symptoms and prognosis of tumours of the intra-orbital portion of the optic nerve and its sheath.

He then describes in detail a case of endothelioma of the nerve in a woman of 47 with a history extending over 10 years.

H. Coverdale.

XXIV. LENS

365. The Action of Sulphanilamide on Rabbits' Lenses in Vitro.
A. BAKKER. *Brit. J. Ophthalmol.*, 31, 216-219. April, 1947. 15 refs.

In previous experiments the author found it possible to preserve rabbits' lenses in a current of liquid obtained from the abdominal cavity of these animals. Such lenses showed continuation of normal metabolism, growth, permeability of the capsule to ascorbic acid, and regeneration of the capsule after experimental injury. It was also demonstrated in experiments on the effect of light upon the lens that cataract is caused by rays of long wave length only when the lens is covered by the pigmented iris.

In the experiments which form the main theme of this article, the effect of sulphanilamide was tested by observing the opacification of any of the lenses under its influence, and by estimating its action on the concentration of carbonic anhydrase. This enzyme is present in high concentration in the normal lens, diminishes in cataractous lenses, and is inhibited by sulphanilamide.

It was found that while the capsule was freely permeable to the drug, concentrations of up to 20 mgm. %, i.e. well above the therapeutic level, had no toxic effects. A concentration of 400 mgm. % caused rapid opacification, chiefly of the posterior cortex in the lenses of 4-weeks-old rabbits, but had a much slower action upon the lenses of adult animals.

It is concluded that the normal therapeutic use of sulphanilamide has no ill effect upon the lens, but the case is quoted of a woman with corynebacterium who was given prontosil album for 4 months, and developed capsular and subcapsular opacities.

A. Lister.

366. The Fluorescence of the Normal and Cataractous Lens and the Flavine Substances.

G. CRISTINI. *Ophthalmologica*, 113, 156-164. March, 1947. 6 refs.

The fluorescence of the normal and cataractous lens and its extracts after alkaline photolysis is studied, and the results tabled. The purpose of the investigations is to prove Fischer's hypothesis, in which he says that cataract is caused by photolysis of the flavine substances occurring in the lens. The author was not able to confirm this theory.

J. A. Magnus.

367. Cataract.

H. B. STALLARD. *Practitioner*, 158, 393-393. May, 1947. 2 figs. 4 refs.

A short résumé of the clinical importance of cataract from the point of view of the general practitioner. The ætiology is discussed under the headings of the biological aspects of senescence, local disturbances of the eye, and general metabolic disturbances such as toxæmias, vitamin deficiencies and endocrine influences. The pathology, clinical symptoms and signs of lenticular opacities are detailed and a summary given of the more common clinical types—congenital, traumatic, senile and pathological. There follows a discussion of the treatment together with an outline of operative measures of relief.

Stewart Duke-Elder.

368. Cataract and Tissue Asphyxia.

F. P. FISCHER. 110th Meeting Netherlands Ophthal. Soc. June 16, 1946. Reported in *Ophthalmologica*, 113, 253-255. April, 1947.

Fischer takes from the literature figures of the Na/K ratio in various organs of old people, in patients with cardiac disease, and in fatigued muscles and compares these figures with those of young organs, and normal heart and muscle. He finds the ratio increased in the former group, in which he claims asphyxia is the factor operative in causing the alteration. Similar findings obtain in asphyxiated animals and tissues. On the analogy that the sodium-potassium ratio is greatly increased in cataractous lenses, he claims that the cataractous lens is an asphyxiated lens.

[Fischer's thesis is almost certainly true, but his presentation of it appears to be special pleading. It ignores the K/Na distribution in normal tissues. K is the ion of intra-cellular fluids, Na that of extra-cellular. With death of the cells and disruption of its cell membrane free diffusion of K can take place and the Na/K balance will naturally shift towards the Na side in equilibrium with the surrounding tissue fluids. The cataractous lens is a dead lens, but unless it can be shown that the Na/K ratio is altered in the earliest stages before extensive cell death has taken place, it can hardly be argued on those grounds that the lens is asphyxiated.]

A. J. B. Goldsmith.

369. Central Scotoma in Some Secondary Cataracts. (A proposito di uno scotoma centrale rilevabile in alcune forme di cataratta secondaria.)

A. FODDIS. *Boll. d'Ocul.*, 26, 87-97. Feb., 1947. 4 figs.

A theoretical discussion of the causes of central scotoma in secondary cataract.

C. Guiseppe.

370. Reply to Dr. Foddis regarding the Possibility of a Central Scotoma Arising from an Alteration of the Posterior Capsule in Aphakic Patients. (Risposta alla nota del Dr. Foddis riguardo alla possibilita' di uno scotoma centrale provocato da alterazioni della cristalloide posteriore negli afachici.)

M. FOCOSI. *Boll. d'Ocul.*, 26, 98-102. Feb., 1947.

A polemic about central scotoma in secondary cataract.

C. Guiseppe.

371. Problem of Congenital Cataracts.

H. L. HILGARTHER. *Texas State J. Med.*, 42, 602-603. Feb., 1947.

The author draws conclusions from his long experience of congenital cataract cases at the Texas School for the Blind. Many of these are blind following unsuccessful operations, others have not been operated on when they arrive. He finds that the most common postoperative complications are as follows (recommended treatment is given in parentheses): (a) acute glaucoma and (b) acute uveitis due to swelling lens matter (curette evacuation); (c) eccentricity of the pupil due to adhesions between iris and lens capsule or iris and operation scar (iridotomy if the eye is quiet); (d) dense capsular and lenticular remains (removal with forceps through a corneal section with iridectomy if necessary).

In order to avoid such complications and disasters he recommends: (a) operation under general anaesthesia in the very young and in unruly patients; (b) never attempt extraction as for an adult lens; (c) make a preliminary complete iridectomy if the pupil will not dilate well; (d) do not overdo the first discission; (e) never operate on both eyes at the same sitting.

A. Lister.

372. A Method of Closing the Cataract Incision.

P. H. DECKER. College of Physicians of Philadelphia; Section of Ophthalmology. Reported in *Amer. J. Ophthal.*, 30, 70-72. Jan., 1947.

The author describes a method of closing the cataract incision by sliding a large conjunctival flap from above downwards over a corneo-scleral suture. The method ensures adequate sealing of the section allowing rapid and early reformation of the anterior chamber.

A. G. Leigh.

373. On Corneal Sutures in Cataract Extraction. (Ueber die Hornhautnaht bei der Staroperation.)

F. W. STOCKER. *Schweiz. med. Wchnschr.*, 8, 253-255. Feb. 22, 1947. 1 table. 1 fig. 9 refs.

After five years spent in observing cataract extractions in various parts of America and in performing the operation himself, the author is convinced of the efficacy of closing the corneo-scleral wound with some form of suture. He considers that its advantages in

preventing iris prolapse and delayed closure, with consequent excessive astigmatism and sometimes infection, far outweigh its disadvantages of slight increase in operation time, and in the case of the suture he uses, in difficulty of making a good section. He has not found that the suture adds to the risk of infection if strict asepsis is observed.

He uses and recommends as giving the most efficient closure a slightly modified Maclean suture. It is laid as follows : before the section is made, a small conjunctival flap is turned down and the superficial layers of the sclera are divided just above and parallel to the limbus for 2 or 3 mm. at 12 o'clock. One end of a double-armed 6-0 silk suture on eyeless needles is passed from above downwards through each lip of the scleral incision and out through the conjunctival flap so as to appear on its external surface near its base. The part of the suture crossing the incision is drawn out in a loop so as to lie clear of the eye. The other end of the suture is passed through the conjunctival flap appearing on its external surface close to the point of exit of the first end, and is also drawn out in a loop clear of the eye. The corneal section is then made, the knife emerging in the lips of the initial incision. At the end of the operation the suture is tightened and tied, and the conjunctival opening is closed with two superficial sutures. The results of one hundred extractions, 60 extra- and 40 intra-capsular, in which this suture was used are tabulated.

A. Lister.

374. "Square-Extraction" of Secondary Cataract. ("Extraction en carré" de la cataracte secondaire.)

T. A. Vos. *Ophthalmologica*, 113, 319-320. May, 1947.

For dense secondary cataracts the author advocates quadrangular excision, carried out by introducing two sickle knives successively in directions at right angles. After this, through a keratome incision the "shutter" of capsule is removed with a suitable forceps.

A. J. B. Goldsmith.

375. Preventive Penicillin Therapy in Operation for Cataract. M. SANCHEZ MOSQUERA.

Vide abs. 282.

XXV. VITREOUS

376. Experimental Observations on the Intravitreal Use of Penicillin and Other Drugs. J. P. DUGUID, M. GINSBERG, I. C. FRASER, J. MACASKILL, I. C. MICHAELSON, and J. M. ROBSON.

Vide abs. 278.

XXVI. GLAUCOMA & HYPOTONY

377. Statistics on Glaucoma. (Glaukom i tall.)

I. C. HOLST. *Nordisk Medicin*, 34, 847-850. April 11, 1947.

The author has collected 2,024 cases of glaucoma simplex from the University Eye Clinic in Oslo within a 20-year period (1920-39). 24,127 patients were admitted in the course of this period. The percentage of glaucoma simplex was 8.4. There was a preponderance of males (62.3%). Information on the refraction was

present in 1,417 cases of glaucoma simplex distributed as follows: hypermetropia in 25.6%, emmetropia in 50.7%, myopia in 19.1%, astigmatism in 4.6%. These figures are compared with Herrnheisser's "Normal Curve" and it is emphasized that the glaucoma material showed only half as many cases of hypermetropia as one should expect to find in a normal population (after Herrnheisser 55%). The myopia cases showed no significant differences.

In 1,040 cases it was stated which eye had been affected first. There proved to be a slight preponderance of left eyes (486 cases) over right eyes (390 cases).

Examination for exfoliation of the lens capsule was undertaken in 459 cases, of which 82% (375 cases) showed exfoliation. In 53 cases of unilateral glaucoma exfoliation was found in the glaucomatous eye only. Exfoliation was never found in the healthy eye alone.

E. Godfredsen

378. A Clinical Addition to the Knowledge of the Aetiopathology of Primary Glaucoma. (Aportacion clinica al conocimiento de la etiopatogenia del glaucoma primitivo.)

T. LUCENA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 265-285. March, 1947. 90 refs.

The author discusses at some length Schmelzer's theories on the ætiology of glaucoma, i.e., that it is due to an abnormality of liver function. He found that on war-time diet the tension of both normal and glaucomatous eyes was lowered, and concluded that a diminution of fats and proteins in the diet with less alcohol, coffee, tea, was indicated. There is no definite evidence that either the protein, carbohydrate or fat metabolism is altered in cases of glaucoma, or that the liver function is impaired, and Schmelzer's views have not received widespread acceptance.

The author gives his results obtained by detailed examination of 72 cases of glaucoma. In only two cases was there evidence of hepatic insufficiency, and these two cases suffered from coincident cholecystitis, and cirrhosis. Extensive investigations were made on the past history, renal function, blood pressure, basal metabolism, etc.; the bilirubin in the blood was estimated, and the urobilin in the urine—all with negative results. In the author's opinion in all glaucomatous cases there is a general and local vegetative dystonia. A decrease of excitability and tone of the vegetative nervous system occurred during the Spanish war due to the deficient diet, with a consequent diminution of functional syndromes.

E. E. Cass.

379. The Pathogenesis of Glaucoma.

T. A. Vos. 110th Meeting Netherlands Ophthal. Soc. June 16, 1946. Reported in *Ophthalmologica*, 113, 251-252, April, 1947.

The report is so condensed that it is little more than a list of the various theories promulgated and the factors involved.

A. J. B. Goldsmith.

380. **Primary Glaucoma and the Pituitary-Diencephalic System.** H. ZONDEK and G. WOLFSOHN. *Amer. J. Ophthalm.*, 30, 596-600. May, 1947. 10 refs.

Among 22 cases of primary glaucoma (they appear to have been selected cases) 16 were found to give various (but variable) combinations of evidence of disturbance of the pituitary-diencephalic system such as obesity, disorders of menstruation, and the carbohydrate metabolism, a tendency to water retention, etc. Seven typical case records are given.

It is therefore suggested that in a certain proportion of cases of primary glaucoma a causal factor is pituitary-diencephalic disease acting by means of either a disordered circulation tending to vasodilation, or water retention leading to tissue (including intra-ocular) hydration. Attention is drawn to the hydration and consequent oedema of the extra-ocular muscles which occurs in some types of exophthalmos, and it is suggested that the factor in these cases is the same, namely, the antidiuretic factor of the posterior lobe of the pituitary. It is inferred that some types of primary glaucoma may be included under the heading "diencephalopathy." A. Lister.

381. **Leucoma Adherens and Glaucoma.**

A. W. M. HOUWER. *Ophthalmologica*, 113, 303-309. May, 1947.

The author points out that glaucoma by no means invariably accompanies leucoma adherens. He argues that the adherent iris indicates only that perforation of the cornea has taken place; glaucoma results from formation of peripheral anterior synechiæ when the anterior chamber is collapsed. An illustrative case is described. Cyclodialysis is advocated as the most rational line of therapy.

A. J. B. Goldsmith.

382. **Glaucoma following Herpes.**

A. LAWRENCE. *Med. J. Australia*, 1, 78-79. Jan. 18, 1947.

Four cases are reported. In the first bilateral glaucoma followed an attack of shingles on the right leg. In the second, the glaucoma was secondary to herpetic iridocyclitis. In the third and fourth, glaucoma followed herpes frontalis on the same side but without ocular herpes. The association of herpes zoster and glaucoma has been noted before.

A. Lister.

383. **Glaucoma following the Ingestion of Sulphathiazole.**

M. H. FRITZ and M. KESERT. *Amer. J. Ophthalm.*, 30, 197-198. Feb., 1947. 1 ref.

A list of fifteen observed toxic effects of sulphonamides upon the human eye is quoted. The author describes an addition to the list in the shape of acute glaucoma which occurred in a woman of 24, who was taking sulphathiazole for tonsillitis. [Some of the listed effects are difficult to accept and it seems possible that the rise in intra-ocular tension may not have been a direct reaction to the drug.]

A. Lister.

384. **Personality Patterns in Glaucoma Patients.**

H. L. HIBBELER. *Amer. J. Ophthalm.*, 30, 181-186. Feb., 1947.
2 tables. 4 charts. 3 refs.

This article describes a preliminary study of glaucoma as a psychosomatic disorder. As a result of evidence that emotional factors may play a big part in the ætiology and treatment of glaucoma, a scheme has been in operation in Washington for some years whereby all glaucoma patients are referred to a social worker for social investigation and therapy. From 154 such patients 27 were selected for study of their personality trends against a group of unselected controls. The instrument employed was the Minnesota multiphasic personality inventory. This is a questionnaire arranged in three validity scales to test the validity of the subjects' answers and nine scales designed to measure personality trends—hypochondriacal, depressive, hysterical, psychopathic, sex interest, paranoiac, psychoasthenic, schizophrenic, and hypomanic. The higher the score the greater the deviation from normal.

It was found that two-thirds of the patients, compared to 5% of the controls, showed masked deviations on one or more of the personality scales. Though no personality pattern was common to the group as a whole, the trend of males was found to be commonly towards depression and hysteria, and of females towards paranoia and schizophrenia. Another interesting observation was that patients whose tension was, after medical [meaning, apparently, social] treatment, within normal limits, tended to have higher scores than those whose tension was consistently or often raised. It is inferred from this that the more successful an hysterical symptom is in relieving psychological stress, the less the somatic effect of that stress. [A paradox would seem to lurk here]. *A. Lister.*

385. **Glaucoma Signs and Symptoms.**

E. C. ELLETT. *Memphis Soc. Ophthalm. and Otolary.* Reported in *Amer. J. Ophthalm.*, 30, 64-65. Jan., 1947.

Four cases are reported presenting the signs and symptoms of glaucoma without a rise in intra-ocular pressure. *A. G. Leigh.*

386. **A General Survey of Glaucoma and Operation thereon in Turkey. (In Turkish).**

N. F. AYBERK. *Göz klinigi*, 1, 1-10. Jan.-Feb., 1947.

The author gives a general report on 500 cases of glaucoma; 58% were females and 42% males. 61% of cases had a blood pressure of above 190 mm., and 50 out of 305 showed a positive Wassermann reaction (17%). There were 2 cases of juvenile glaucoma, one had chronic rhinitis and the other maxillary sinusitis, and both recovered after treatment of the focal infections.

Cyclodialysis operations were performed on 56 cases and good permanent results were obtained in those having a tension below 35 Schiötz. The author prefers the Elliot operation with a sliding

conjunctival flap, and in cases which are associated with cataract prefers the combined lens extraction and Lagrange's sclerectomiridectomy operation. In 2 cases with persistent intra-ocular tension, perforating cyclodiathermy gave good results. S. Gördüren.

387. **Cyclodiathermic Puncture of Vogt in Glaucoma.** (La ciclo-diatermopuntura di Vogt nel glaucoma.)

L. LONGHENA. *Boll. d'Ocul.*, 26, 7-30. Jan., 1947. 24 refs.

The effects of cyclodiathermic puncture in 30 glaucomatous patients, of whom 26 were operated unilaterally and 4 bilaterally, are discussed. Analysis of the normalization of ocular tension, visual field and vision shows that the results are on the whole satisfactory. C. Guiseppa.

388. **Iridencleisis in the Treatment of Secondary Glaucoma.** (L'iridencleisis dans le traitement du glaucome secondaire.)

M. KALT. *Arch. d'Ophthal.*, 7, 18-27. 1947. 22 refs.

Kalt reports on 22 cases of secondary glaucoma treated by iridencleisis. He considers that the results justify a more extensive trial of this operation in the treatment of glaucoma. G. I. Scott.

389. **An Uncommon Case of Sturge-Weber's Disease.** K. RORVIC.

Vide abs. 483.

XXVII. EYE-BALL : PARASITES

390. **Infections of the Eye.**

T. SUMMERS. *Practitioner*, 158, 394-399. May, 1947. 1 ref.

A short summary of the main infections of the eye written for the general practitioner. The author discusses infections of the lids (blepharitis, styes, meibomian cysts, etc.) of the lacrimal sac, the conjunctiva and cornea as well as the routine treatment of these conditions. Stewart Duke-Elder.

391. **Considerations on a Case of Intra-Ocular Cysticercus.** (Consideraciones sobre un caso de cisticercito endocular.)

M. SANCHEZ-MOSQUERA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 234-244. March, 1947. 9 figs.

The author describes a case of cysticercus. The patient had noticed a blurring of vision for 20 days, with frontal pain and a sensation of heat. Ophthalmoscopically the cyst completely covered the papilla and there was swelling of the surrounding retina with hæmorrhages. The scolex could be seen, and its head was armed with hooks, and with four suckers. The vitreous, when examined with the slit lamp, was seen to have degenerative changes in the region of the cyst.

The patient admitted to passing some white segments of *Tænia* about seven months previously. Filix mas was given with no permanent effect upon the activity of the scolex in the eye. The intestinal parasite was passed, and unfortunately the head was lost, but by its rings it was recognized as a *Tænia Saginata*.

Massive doses of sulphonamide had no effect on the ocular parasite, nor did the application of radium over prolonged periods. The

cysticercus was then extracted surgically by incision through the sclera over the site of the tumour, and by means of a suction apparatus which removed the head of the parasite, the rest of the body being removed with fine forceps. In spite of the fact that the vesicular liquid is supposed to be irritating, there was no reaction; 15 days after operation the eye was quiet and the cornea transparent. There was, however, a large retinal detachment and the eye was blind.

The author suggests that in this case there was apparently a double infection by both *Tænia Saginata* and *Tænia Solium*, as all his colleagues who examined the intestinal parasite agreed that this was a *Tænia Saginata*, but the crown of hooks in the ocular parasite pointed to *Tænia Solium*.
E. E. Cass.

392. Ocular Myiasis. (Miasis ocular.)

A. CASTRESANA Y GUINEA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 163-172. Feb., 1947. 2 figs. 27 refs.

An account is given of a case of ophthalmomyiasis in a girl of six years. Numerous minute, whitish, very mobile larvæ were found in the lower conjunctival fornix near the outer canthus. They were identified as those of *Oestrium ovis*. After removal and the application of a calomel ointment immediate recovery ensued.

The second part of the paper is devoted to a discussion of the literature of ophthalmomyiasis.

The author's conclusions are: (1) In all cases with a history of ill-defined traumatism, careful examination should be made for ova or larvæ of diptera. (2) If a diagnosis of myiasis is made the larvæ should be removed as soon as possible lest an external should develop into an internal myiasis. (3) Treatment consists of manual removal of the larvæ after local anæsthesia followed by the use of mercurial antiparasitic ointments.
H. M. Traquair.

393. Remarkable Behaviour of Animal Parasites.

G. F. ROCHAT. 110th Meeting Netherlands Ophthal. Soc., June 16, 1946. Reported in *Ophthalmologica*, 113, 249. April, 1947.

(1) After a negative exploration of the orbit in a boy aged 10, œdema of the cheek developed, and later a horse-fly larva was removed from the mucous membrane reflected from the alveolar process of the upper jaw. It had apparently passed from the orbit under the skin to the mouth.

(2) The eye of a boy aged 6 showed a recurrent hypopyon iritis and eventually shrank and was removed. In the eye, scolices probably of a *tænia solium* were found. The child himself was known only to suffer from oxyuris infection.

A. J. B. Goldsmith.

394. A Case of Toxoplasmal Chorio-Retinitis. C. D. BINKHORST.
Vide abs. 340.

XXVIII. LIDS.

395. **Penicillin Therapy in Blepharitis.** (Possibilita' e limiti della terapia penicillinica nelle blefariti.)

A. GRIGNOLO. *Boll. d'Ocul.*, 26, 117-126. Feb., 1947. 15 refs.

Considerations on the results obtained with penicillin therapy in 11 cases of squamous blepharitis and 39 cases of ulcerative blepharitis controlled over 7 months.

C. Guiseppe.

396. **Treatment of Lupus Vulgaris with Large Doses of Vitamin D₂.** (Behandeling van lupus vulgaris met hoge doses vitamine D₂).

W. J. HOHMANN and G. W. BEENING. *Ned. Tijdschr. Geneesk.*, 91, 78-82. Jan. 11, 1947. 14 figs. 10 refs.

The authors used the treatment of lupus introduced by Dowling, who gave 1 to 3 calciferol tablets daily, each containing 50,000 I.U. of vitamin D₂, for 6 to 12 months. The advantages were that treatment was ambulatory, there were no unpleasant local applications, improvement was rapid with good psychological effects, and scar formation was small. The authors treated 87 patients, 31 men and 56 women, with "dohyfral" tablets (30,000 I.U. vitamin D₂). The patients received one tablet thrice daily for 3 months. After this one tablet thrice daily was again given, and later one tablet daily. Most of the cases were chronic and had hitherto proved intractable. In some cases the disease had become quiescent but had never healed. With the administration of vitamin D₂ all 87 improved. Lupus tumidus became flat and healed with small scars; in lupus ulcerosus the ulcers closed quickly. The skin regained its suppleness and the mucous membranes showed similar effects. No local treatment was necessary. In severely affected patients there was an improvement amounting to clinical cure, but the pathologists found that in fact tubercles persisted and nodules did not calcify.

Very large doses of vitamin D₂ seem to be well tolerated if the preparation is pure. Harmful effects are rare.

[The photographs of patients are a striking justification of the claims made in the text.]

B. Baneth.

397. **Hemifacial Spasm. Report of Two Cases.**

D. M. GORDON. *Arch. Ophthalm.*, 37, 282-293. March 1947. 4 figs. 8 refs.

Hemifacial spasm is a condition in which the patient has paroxysms of twitchings in muscles innervated by the seventh nerve. The condition is not under voluntary control, and is not a tic. One of the cases observed by the author was a man of 27 who had suffered from the condition for 3 years. It was said to have developed after a cold. There was a history of rheumatic fever. The right palpebral aperture was greatly narrowed both vertically and horizontally. The right nasolabial fold was prominent, and the mouth and nose were drawn to the right. There was a double paresis of the elevator muscles on the right side, with weakness of both inferior and both

external rectus muscles. Although physical examination was essentially negative, the possibility of encephalitis was considered. An electroencephalographic study showed a pathologic record revealing a diffuse abnormality, with a probable right occipital focus. The nature of the abnormality was not indicated.

Operation was carried out by exposing six branches of the facial nerve as they emerged from the parotid gland. These branches were partially divided by introducing a short bistoury blade into the nerve, with the blade running parallel with the fibres. It was then carried along the fibres and turned outwards. This resulted in a hemisection of the nerve, and a silk suture was tied around the stump. Immediate post-operative examination showed weakness of the muscles of the forehead, and the upper part of the face, but the distortion was not serious. The palpebral apertures were of equal size, and the eyes could be closed equally.

The other patient described by the author was a woman of 65, who had a mastoid operation carried out in 1944, which was followed by Bell's palsy. She complained of cramps about the right eye, lasting several minutes, during which her eyelids became partially or completely closed. There was a marked facial asymmetry with palsy of the right side of the face. Procaine was injected at the site of the supratrochlear nerve, and relieved the pain in the eye for a period of 2 hours. An attempt to inject the right seventh nerve at the stylomastoid forameu was unsuccessful, but when it was repeated at the condyle a complete palsy lasting about 15 minutes was produced. She reported 9 days later, and stated that she had been free from these facial spasms for 4 days.

The paper contains a review of the literature concerning the cause and mechanism of spasm. It is pointed out that at least two forms exist, one on an idiopathic basis and the other following regeneration of a traumatized seventh nerve. The two cases described are presented as illustrative of each type. *W. J. B. Riddell.*

398. The Marcus Gunn Phenomenon. Discussion, Presentation of Four Instances and Consideration of its Surgical Correction. E. B. SPAETH. *Amer. J. Ophthalm.*, 30, 143-158. Feb., 1947. 10 figs. 23 refs.

This article, the lay-out of which makes it somewhat indigestible, is a discussion of possible mechanisms of the Marcus Gunn or jaw-winking syndrome. It is based on four cases which are described and, as aids to the elucidation of the problem, examples of allied pathological associated reflexes are quoted. These latter include the same syndrome when acquired, i.e., the so-called pseudo-Græfe syndrome—the Marcus Gunn is essentially congenital—contraction of the orbicularis associated with jaw movements, contraction of the levator on adduction and abduction of the eyeball, and the syndrome of crocodile tears. No satisfactory conclusive solution is reached.

It seems certain that the pseudo-Græfe syndrome is due to misdirection of post-traumatic regeneration of 3rd nerve fibres. In the quoted example, following complete 3rd nerve palsy due to a fractured base there was residual absence of upward rotation, weakness of downward rotation and adduction, partial ptosis, and dilated pupil. On attempts at downward or inward rotation the lid lifted strongly and the pupil contracted. The basis of the Marcus Gunn phenomenon would appear to be similar but congenital misdirection or intermingling of nerve fibres or tracts of the 5th and 3rd cranial nerves. The possible abnormal connections discussed are:—

1. Neuronal intercommunication between the nuclei of the 7th, 5th, and 3rd cranial nerves. This is supported (a) by the close embryological relationship of the 5th motor nucleus and the 3rd nucleus, and (b) by case 3 in which among other anomalies paresis of both external recti was associated with levator action on attempts at abduction. Entry into the complex of the 6th cranial nerve could only be by connections within the brain stem.

2. A cortical or sub-cortical abnormal pattern—c.f. Bell's phenomenon.

3. An abnormal reflex arc of which the afferent limb may be (a) the sensory branch of the mandibular division of the 5th nerve, or (b) the motor branch of this division, implying a purely motor complex; the efferent limb of the arc taking over from the afferent limb either in the Gasserian ganglion or through the brain nuclei, may be (c) sympathetic fibres in the ophthalmic division of the 5th nerve to unstriated muscle in the eyelids or (d) somatic fibres in the 3rd nerve to the levator palpebrae. Arguments for and against each possibility are discussed at length.

4. That the phenomenon may be initiated, at least sometimes, in the cortex is supported by (a) the close proximity of cortical areas controlling the jaw and eyelid, and (b) such cases as the ptotic moron (described below) whose eyes opened when he was enraged.

5. Lastly, the widening of the palpebral aperture may be caused by the action of excess acetylcholine, formed by emotional (cerebral) or sympathetic stimulation, on unstriated muscle in the eyelids.

Case 1 was a boy of 12 with complete external ophthalmoplegia due to absence, except as fibrous bands, of the recti and obliques, and ptosis with strong levator action on opening, closing, and lateral jaw movement. Notable is the early stage of foetal life at which the phenomenon must have developed, when the masses of the orbital paraxial mesoderm should have become differentiated into ocular muscles. Case 2 was a girl of 8 with right-sided ptosis wherein the lid lifted only when the jaws were opened and on downward rotation of the eyes. Case 3 was a moron of 15 with paralysis of both external recti, the right superior and inferior rectus, paresis

of the left levator and superior oblique. Both upper lids, but chiefly the left, entered into the jaw-winking reflex and, among other anomalies, there was marked right levator action on looking to the right, of both levators on looking to the left. Case 4 was a typical jaw-winker with a number of unusual features. Possible explanations of each case are discussed.

The method employed for correction of an abnormal levator reflex is to abolish it by myectomy of the responsible muscle and correct the resultant paralytic ptosis by orbicularis transplants.

A. Lister.

399. Indications for "Contact" Radiotherapy in the Treatment of Ocular and Lid Tumours. (Indications de la radiothérapie de près "dite de contact" dans le traitement des tumeurs oculo-palpébrales.) F. BACLESS and A. ENNUYER. *Vide abs.* 286.

400. Tumours of the Adnexa.

A. BAKKER. 110th Meeting Netherlands Ophthalm. Soc. June 16, 1946. Reported in *Ophthalmologica*, 113, 238-239. April, 1947.

(1) An atheromatous cyst of the lid, containing cholesterol esters. (2) Lymphoma of the plica semilunaris. (3) Nevus (simple melanoma) of the intermarginal strip. (4) Melanocytoblastoma of the edge of the eyelid

Case reports.

A. J. B. Goldsmith

401. Rare Tumours of the Caruncle. (Seltene Geschwulste der Caruncula lachrymalis.)

M. RADNOT. *Ophthalmologica*, 113, 270-275. May, 1947. 7 figs. 7 refs.

Two tumours are described; the first, in a man of 69, was an oncholytic cyst derived from an accessory lacrimal gland. The second, in a man of 67, was a giant cell sarcoma showing some affinity to perithelioma.

A. J. B. Goldsmith.

XXIX. LACRIMAL APPARATUS

402. Motility of the Lacrimal Sac after Rhinostomy. (Studio sulla motilità del sacco lacrimale dopo rinostomia.)

R. SCIDENARI. *Boll. d'Ocul.*, 26, 103-116. Feb., 1947. 5 figs. 28 refs.

This paper describes how the movement of the lacrimal sac after dacryocysto-rhinostomy by Reverdino's method can be demonstrated. A rubber bladder is introduced into the lacrimal sac, and a connecting tube emerges from the nostril. This is linked with Marey's movable cylinder in such a way that movements of the sac are registered on the rotating drum. Movements of the lacrimal sac in association with winking illustrate that mobility is retained after dacryocysto-rhinostomy.

C. Guiseppe.

403. Surgical Treatment of Sjögren's Disease. (Traitement chirurgical du syndrome de Sjögren.)

R. LERICHE. *Press. Méd.*, 7, 77-78. Feb. 1st, 1947.

The author relates a case of Sjögren's disease which was operated upon with success (bilateral section of the roots of the vertebral nerve). In this syndrome there is an atrophy of the lacrimal and

salivary glands, probably due to a lack of blood supply because of local vaso-constriction ; but the trouble is not purely local and one deals here with a general and, as yet, unexplained disease.

The author believes that a pathologic examination of the sympathetic ganglia and an arteriography through the external carotid might be performed during the operation he advises. *S. Vallon.*

404. A Case of Cylindroma of the Lacrimal Gland. (Un caso di cilindroma della ghiandola lacrimale.)

G. CORNALBA. *Rassegna Ital. d'Ottol.*, 16, 41-49. Jan.-Feb., 1947. 7 photographs. 21 refs.

Report of a case.

N. Pagliarant.

405. Site of Ergastoplasm in the Rabbit's Lacrimal Gland after Pilocarpine Injection. (Situation particulière de l'ergastoplasme de la glande lachrymale du lapin après injection de pilocarpine.) C. BONHOMME and J. FERRIE.

Vide abs. 490.

XXX. ORBIT.

406. Exophthalmos of Endocrine Origin.

T. G. MARTENS. *Amer. J. Med. Sci.*, 213, 241-245. 1947.

A review.

British Abstracts.

407. Fibroma of the Orbit.

A. G. MIRANDA. *Ophthalmologica*, 113, 149-156. March, 1947. 5 figs. 8 refs.

A rare case of fibroma of the orbit is described. It was removed by Kroenlein's operation. The histological examination did not reveal anything new. *J. A. Magnus.*

408. Malignant Teratoma of the Orbit: Six and One-half Years' Observation.

A. V. SARADARIAN. N.Y. Acad. Med., Section of Ophthal. Oct., 1946. Reported in *Arch. Ophthal.*, 37, 253. Feb., 1947.

A female child was born, having the right eye pushed markedly outward by a large tumour. The right orbit was exenterated and treated with radium. Pathological examination showed a malignant teratoma. The child remained well for 6½ years. Dr. Wendell L. Hughes said that the cosmetic appearance of this child was bad, but that surgery would not help. The best treatment would be a suitable prothesis.

A. G. Cross.

409. Lymphosarcoma of the Orbit.

J. W. MCKINNEY. Memphis Soc. Ophthal. and Otolary. Reported in *Amer. J. Ophthal.*, 30, 65-66. Jan., 1947.

In a man aged 59 a firm mass surrounding the eye and causing protrusion of the lids was found on biopsy to be a malignant tumour resembling a non-pigmented melanoma. As there was no evidence of metastasis the orbit was exenterated ; the tumour was found to be a lymphosarcoma. Seven weeks following operation the patient died from generalised dissemination of the growth.

A. G. Leigh.

The author has collected 454 cases of malignant nasopharyngeal tumours over a period of 10 years from a population of $7\frac{1}{2}$ million people. This amounts to 0.4% of all cases of cancer in that population. Of these patients 38% presented ophthalmo-neurological symptoms.

Histopathological examination revealed both carcinoma and sarcoma, in conformity with the fact that these tumours arise from the mucous membrane and lymphatic tissue of the nasopharynx.

Age incidence.—All age groups from 4–79 were represented, but half were within the age group 41–60.

Symptomatology.—The symptoms may be (1) ophthalmological, (2) rhinological, (3) otological, (4) due to enlarged cervical metastatic glands.

The early symptoms are summed up in Table I.

TABLE I.

PERCENTAGE DISTRIBUTION OF THE DIFFERENT GROUP SIGNS AND SYMPTOMS AT THREE STAGES OF THE DISEASE AMONG 454 CASES OF MALIGNANT NASOPHARYNGEAL TUMOUR.

	1st symptom 11 months be- fore diagnosis is made. %	Initial picture 4 or 5 months before diag- nosis is made. %	Fully developed picture when the diagnosis is made. %
Ophthalmo-neurological symp- toms	16.0	34.8	38.0
Rhinological symptoms	30.8	51.4	56.2
Otological symptoms	23.0	48.5	49.1
Metastatic cervical glands	32.6	48.4	74.9

This analysis shows that ophthalmo-neurological symptoms appear early in the disease and can be sorted out as a special group 4 or 5 months before an exact diagnosis is made.

Nature of ophthalmo-neurological symptoms.—Lesions of the eye nerves and/or fifth nerve lesions are found in practically all cases and the relationship between the two is shown in Table II.

TABLE II.

INCREASE IN FREQUENCY (%) OF OPHTHALMOLOGICAL SYMPTOMS COMPARED WITH THAT OF TRIGEMINAL LESIONS—FROM THE FIRST SYMPTOM TO THE FULLY-DEVELOPED PICTURE.

	1st symptom 11 months be- fore diagnosis is made. %	Initial picture 4 or 5 months before diagnosis is made. %	Fully developed picture when the diagnosis is made. %
Frequency of ophthalmological symptoms	14.4	51.0	75.2
Frequency of trigeminal lesions	71.0	70.0	68.0

Thus the first symptom—occurring about 11 months before the diagnosis is made—is usually (71.0%) trigeminal neuralgia in the maxillary area. This may be combined with either nasal stenosis, metastatic cervical glands or tubal occlusion. The only ophthalmological symptom at this stage is abducens paresis.

Table III shows that 75.2% of the cases had ophthalmological symptoms and that two-thirds of these patients presented trigeminal

lesions as well. Correspondingly two-thirds of the 68% with trigeminal lesions presented ophthalmological symptoms as well. It appears from this close connexion between ophthalmological symptoms and trigeminal lesions that the tumour tissue usually affects the area round the cavernous sinus, where these cranial nerves run in intimate relation to each other.

TABLE III

NATURE AND FREQUENCY OF OPHTHALMO-NEUROLOGICAL SYMPTOMS IN 172 PATIENTS WITH MALIGNANT NASOPHARYNGEAL TUMOURS

Eye symptoms 129 patients 75.2%	{	Alone	{ Ophthalmoplegia	22 patients
		40 patients 23.4%	Ophthalmoplegia + II	11 patients
			Ophthalmoplegia + Horner	3 patients
			II lesion alone	2 patients
			Exophthalmos	2 patients
V-lesions 117 patients, 68.0%	{	With V-lesion	44 patients	25.6%
		With other cranial nerve lesion, partly V 45 patients		
			With eye symptoms	78 patients 45.4%
			Without eye symptoms	39 patients 22.6%

TABLE IV

THE NATURE AND FREQUENCY OF 461 SINGLE NERVE LESIONS IN 172 PATIENTS WITH MALIGNANT NASOPHARYNGEAL TUMOURS

Nerve lesions	VI	III	IV	II	Horner	V	Others
Frequency	114	42	29	29	27	119	101
Per cent	24.0	9.1	6.3	6.3	5.8	25.7	21.8

Of the 461 cranial nerve lesions 6.7% were bilateral lesions which in practically all cases affected the eye nerves. The eye symptoms therefore play a predominant part in the early diagnosis of these tumours.

Exophthalmos due to penetration of the tumour into the orbit was found in 19 patients with varying degrees of chemosis and disturbance of motility, generally associated with a poor general state.

The author has described a new syndrome in connection with these tumours—a coincident paresis of the 6th, 12th and sometimes also the 5th cranial nerve. This syndrome was observed in 9 cases. The ophthalmoplegia and trigeminal involvement are due to invasion of the cavernous sinus by the tumour. The 12th nerve lesion is due to invasion by the cervical lymphatics.

Treatment is now purely radiological. The "five year cure" rate for all cases was 22.2%, but in those tumours consisting of radio-sensitive reticulum cell sarcomas, it was nearly 40%.

Seymour Philips

420 A New Ophthalmic-Neurological Syndrome pathognomonic of Malignant Nasopharyngeal Tumours. (Un nouveau syndrome ophtalmoneurologique pathognomonique dans les tumeurs malignes du naso-pharynx (ophtalmoplégie et paralysie du nerf grand hypoglosse simultanées))

E. GODTTFREDSEN. *Rev. d'Oto-Neuro-Ophthal*, 19, 72-84. Feb., 1947.

A paper dealing with the malignant naso-pharyngeal tumours stressing the clinical syndrome described by the author, which he

finds in 5% of such cases—ophthalmoplegia (usually involving the 6th nerve) followed by paralysis of the hypoglossal nerve frequently accompanied by severe neuralgia. The ophthalmoplegia and trigeminal involvement are due to a spread of the growth to the base of the skull, the involvement of the hypoglossal nerve to the pressure of retropharyngeal lymph glands. Godfredsen considers this syndrome pathognomonic of such tumours. *Vide abs. 419.*

Stewart Duke-Elder.

421. Ophthalmo-neurological Symptoms in Malignant Naso-pharyngeal Tumours. E. GODTFREDSSEN. *Proc. Roy. Soc. Med.*, 40, 131-135. Jan., 1947. 1 ref. *Vide abs. 419.*

422. **The Diagnosis and Treatment of Tumours of the Nasopharynx.** E. D. D. DAVIS. *Proc. Roy. Soc. Med.*, 40, 135-138. Jan., 1947. 8 refs.

In the past 25 years the author has collected a series of 33 patients with tumours of the nasopharynx, and of these 19 were carcinoma, 4 lympho-sarcoma or lymphomata, 9 angio-fibroma and 1 myxo-sarcoma of doubtful origin.

Early diagnosis of the tumours is delayed because of difficulty of examination and absence of any specific diagnostic symptoms or signs. Of 79 patients who were finally found to have tumours, 24 had had tonsils and adenoids removed, in 18 cervical glands were excised, 12 had teeth extracted, various intranasal operations were performed and 19 had had a mastoid operation for the relief of pain.

In 6 patients neurological symptoms, headache, pain, diplopia and paralysis of cranial nerves were first noticed. The commonest cranial palsy was of the 6th cranial nerve, first on one side and then the other. The growth may commence in the body or greater wing of the sphenoid and may later appear on the surface of the nasopharynx.

Epistaxis or blood stained mucous discharge should arouse suspicion and careful examination of the nasopharynx should be made. Biopsy from the growth or from a metastatic gland is necessary.

The only treatment to hold out any hope of success is deep X-ray therapy, but cases are usually inoperable when first seen. Of 19 cases mentioned, all died within 18 months in spite of radium and deep X-ray therapy.

There is some difficulty in distinguishing between the bleeding fibroma occurring in the male at puberty, which is innocent, and a malignant fibro-sarcoma. Both produce a typical "frog-face" deformity and the author's conclusion is that if a fibroma recurs after being enucleated, it is probably sarcomatous. Cases of fibroma have been treated by diathermy and radium implantation with success.

Seymour Philips.

423. **Prismatic Therapy Employed in 160 Cases of M'nière's Disease.** (De prismatherapie getoetst aan 160 lijders aan het syndroom van Ménière.)

G. P. UTERMÖHLEN. *Ned. Tijdschr. Geneesk.*, 91, 124-126. Jan. 11, 1947.

For success with the treatment described the diagnosis of Ménière's disease must be beyond doubt. When the history is taken in detail many other symptoms besides vertigo may be found, such as visual hallucinations, difficulty in opening the eyes at night, allergic symptoms, asthma, attacks of vertigo after severe sneezing or after hot or cold douches to the head, or intolerance of sunlight.

The author begins his examination with the eyes (vision, refraction, fundus). Examination of the ear follows. The affected ear seems to have an influence on the tonus in the eye of the same side. As the author's treatment helps only if horizontal nystagmus (also combined with rotatory nystagmus) is present or can be elicited, an examination for this is important. The patient is made to turn round first in a clockwise and then in an anti-clockwise direction. One turn takes 3 to 4 seconds, and the patient makes 1 to 4 successive turns. Prismatic spectacles of $1/2$ prism-dipotre ($1/2$ degree) are put on with their base to the nasal sides, the patient having previously rotated 2 to 5 times; when he puts the spectacles on, the surroundings appear to stand still instantly. Without discomfort he can now bend down, look up while bending backwards, and look to right and left. The most suitable strength of prism sometimes differs for the two eyes and has to be found by trial. With the wearing of prismatic glasses the patient's sensitivity to loud noises ceases but comes back when they are taken off. Emmetropes need only prismatic glasses; with others the prismatic effect is achieved by decentration.

The author has treated about the same number of male and female patients; their ages were between 30 and 60 years and the complaint had lasted in most for 1 to 2 years, seldom longer. In the first 50 patients there have been good results, although some women had a few attacks, possibly because they started work too soon.

B. Baneth.

XXXII. OCULAR MOVEMENTS

Physiology

424. **Binocular Vision.**

D. CAMPBELL. *Brit. J. Ophthalm.*, 31, 321-336. June, 1947. 6 figs. 4 tables. 21 refs.

In this paper (the Middlemore Lecture) the author discusses the factors which contribute to the maintenance of perfect binocular vision: (1) The overlap of visual fields. Phylogenetically it is probable that the development of overlap of visual fields lays the foundation of binocular vision by aiding localization. (2) Fusion sense. Paralytic squint is the most dramatic instance of breakdown

of fusion. In concomitant squint there is a disturbance of the sensory-motor balance which may be followed by the development of amblyopia. (3) Macular dominance. Fusion is very strong in the paramacular area and it decreases towards the retinal periphery. Some degree of stereopsis persists, however, even in scotopic vision or when central visual acuity is greatly diminished.

Physiological aberrations of binocular vision are tabulated as follows:—

Physiological Abnormalities of Binocular Vision

1. Alternating strabismus	...	...	Uniocular vision
2. Congenital nystagmus	...	...	Usually some degree of binocular vision
3. Heterophoria	...	...	Abnormal binocular vision due to rivalry within the "central" area of the retina
Low degrees of concomitant strabismus	...	...
False associated fixation	...	...
4. Large degrees of concomitant strabismus, (a) with, and (b) without suppression	...	...	Abnormal function in both "central" and peripheral retina
5. Advanced suppression with loss of central fixation	...	...
			Peripheral function only in affected eye; binocular vision poor or absent

There is some latitude of fusion in the foveal region extending 2–4° horizontally and 2° vertically. Peripheral visual stimuli displaced by even small intervals will break central fusion, and there are probably many individuals who can never fuse central and para-central images simultaneously. With small squints (less than 12°) the eyes perform small fusional movements in order to obtain binocular vision; patients without foveal suppression show a small area of paramacular suppression. Exceptions to the general rule are found with alternating suppression and in the presence of a "false macula".

Photography shows that there is no exactitude of movement in achieving fixation and the author supports the views of others that binocular vision depends on some form of physiological replacement; this is the only theory that will explain all the aberrations of binocular vision.

In the concluding passages the newer concepts of binocular vision are applied to the practice of orthoptics and the author emphasizes (1) the value of early occlusion and fusion exercises; these can be started even when the vision in one eye is still much below standard; (2) the value of duction exercises in lateral phorias even when some degree of central suppression is present; and (3) the problem presented by false associated fixation.

A. J. B. Goldsmith.

425 A Fixation Light for the Cardinal Directions of Gaze

W C OWENS *Amer J Ophthal*, 30, 611-613 May, 1947 2 figs 9 refs

A single instrument is described for testing ocular deviations in the six cardinal directions of gaze. It consists of a rotating arm fixed to an upright. There is a fixation light at the centre of rotation and another on the end of the arm. The instrument is used in conjunction with a head rest and deviations are measured by a prism cover test.

A Lister

Heterophoria

426 Tests for Heterophoria.

R G SCOBEE and E L GREEN *Amer. J Ophthal*, 30, 436-451. April, 1947 9 refs

Small variations of muscle balance, from any cause, are not important in ordinary clinical practice, but they may become significant when selecting large numbers of men, in accordance with certain arbitrary standards, for piloting duties in the Air Forces. A number of different tests have been investigated, with the object of finding that which is most accurate. The reliability of the screen Maddox-rod test has been proved by the testing of two groups of men by two different examiners and comparison of the results. Comparison of the screen Maddox rod test, the screen and parallax test and von Graefe's prism diplopia test all at 20 feet showed some diversity of results, but it is not possible to select the most accurate upon statistical evidence alone. Comparison of methods at 13 inches showed that the screen and parallax test, von Graefe's prism diplopia test, the Maddox wing test and the Thorington test gave equivalent results, but that the screen Maddox rod test showed a considerable difference from the others. Experiments upon the effects of illumination in the testing room have shown that there is no significant difference if the test is performed in light or in darkness. Other tests show that the accuracy of the Maddox rod test is increased by screening, that there is no significant difference if the Maddox rod is placed before the dominant or non-dominant eye, and that a constant difference in measurement occurs with red and white Maddox rods at 20 feet, though not at 13 ins. It is shown that the results of the screen Maddox rod and the Maddox rod tests can be correlated. [The original paper should be consulted by those who are interested in details of the statistical methods employed.]

A G Cross.

Strabismus

427. The Management of Strabismus in Children.

M. WHEELER *Surg. Gynec. and Obst*, 84, 787-791. April 15, 1947 9 refs

The importance of an accurate record of vision is stressed and it is pointed out that with the E chart children of the age of 3 years can make satisfactory responses. The presence of abduction of one or both eyes may be difficult to confirm. Overaction of the inferior

oblique muscles is very common. Accurate measurement of the angle of squint is the essential preliminary to successful surgical results, and the corneal reflex displacement, the prism reflex, and the cover test methods are advised. The treatment of amblyopia ex anopsia is described and the writer gives his reasons for not using orthoptic exercises. Operation around the age of one year is advised when the squint is present at birth, and when the deviation appears later it is suggested that operation should be carried out as soon as glasses have been worn for a few months and amblyopia treated. It is important that each surgeon should perfect his own technique in squint surgery in order that he may be able to translate accurate measurements of angle into predictable surgical results.

A. G. Cross.

428. The Psychology of the Squinter.

A. E. STROMBERG. *Amer. J. Opth.*, 30, 601-606. May, 1947. 6 refs.

The treatment of the squinter by orthoptic methods demands a thorough understanding of the psychological state of the patient, if the best results are to be obtained. It is desirable, when at all possible, to correct a squint, at least cosmetically, before a child goes to school, in order that the mental trauma of feeling different from other children may be avoided. Orthoptic treatment should not be carried out on children who are too young, because the forcing of under-developed concentration may have the effect of prejudicing the results of this type of treatment when they become older. The best results occur by orthoptic methods when the child desires straight eyes, and orthoptic treatment is contra-indicated, at least initially, if the child cannot straighten his eyes, or if his mental state is such that he cannot appreciate his mistakes. Orthoptic treatment may be prolonged and it is necessary to keep the child interested throughout. Rewards of various kinds for good work are often useful. The co-operation of parents is a great help in the treatment of squints and particularly so during the period of occlusion. It is essential that they should maintain a constant watch to stop "peeping."

A. G. Cross.

429. Obstacles in the Orthoptic Treatment of Squint.

H. O. GARDNER. *J. Iowa State Med. Soc.*, 37, 17-21. Jan., 1947.

The causes of failure in the orthoptic treatment of squint are summarized as amblyopia, suppression, abnormal retinal correspondence, vertical muscular imbalance, and—most common of all—an unco-operative patient or parent. Amblyopia requires constant and complete occlusion of the good eye and its cure succeeds best below the age of 6. Suppression and abnormal correspondence require occlusion and stimulation on the major amblyoscope.

Stewart Duke-Elder.

430. Reflections on the Use of the Myocampter, and on the Under-Correction and Over-Correction of Strabismus. (Considérations sur le myocampter. L'hypocorrection et l'hypercorrection en matière de strabisme.)

J. P. JOLY. *Arch. d'Ophthal.*, 7, 51-59. 1947.

Joly discusses the technique required in the use of the myocampter and believes that it is a useful procedure in the operative treatment of strabismus.

G. I. Scott.

431. The Future of Orthoptics in South Africa.

B. J. REYNOLDS. *The South African Optometrist*, 14, 6-7 and 23. Jan.-March, 1947. 3 refs.

The author regards orthoptic treatment as an essential part of the science of refraction. Training in orthoptics should be incorporated into the Opticians course in South Africa. He relates his experiences from the orthoptic departments of three ophthalmic hospitals in London where the standard of the work is very high. Some literature on the subject is discussed, and the questions of a B.O.A. orthoptics exam. are reprinted.

A. Joki.

432. Simplified Graduable Tenotomy. (Tenotomia graduable simplificada.)

H. ARRUGA. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 17-22. Jan., 1947. 10 figs.

Arruga describes a simple technique of graduated recession for use in moderate degrees of squint. He limits the displacement to 7 mm. for the internal rectus and 12 mm. for the external. Apart from his own method of adjusting the stitch the article contains nothing new. The illustrations are attractive.

H. M. Traquair.

433. Clinical Disturbances of the Oculomotor System.

D. G. COGAN. N.Y. Acad. Med., Section of Ophthal. Oct., 1946. Reported in *Arch. Ophthal.*, 37, 255-257. Feb., 1947.

Four oculomotor syndromes are described. Internuclear ophthalmoplegia is caused by a lesion of the medial longitudinal fasciculus resulting from multiple sclerosis. "Spasm of the near reflex," showing intermittent convergence, myopia, and miosis, is due to hysteria and is treated by negative lenses. "Oculomotor short circuits" are presumed to be the result of innervation of ocular muscles by nerves other than those originally intended. Manifestations are the jaw-winking reflex, and an unnamed anomaly in which there is a rhythmic upward and downward movement of one eye, and a simultaneous extorsion and intorsion of the other eye. Pseudo-ophthalmoplegia in infants is characterized by paralysis of voluntary lateral gaze with preservation of haphazard gaze.

A. G. Cross.

434. Cogwheel Phenomenon of the Eyes.

N. SAVITSKY and N. W. WINKELMAN. *Arch. Neurol. Psychiat.*, 57, 362-368. March, 1947. 41 refs.

This paper gives a general review of the literature and the authors' observations in 641 cases. The cogwheel phenomenon consists in

repeated short pauses of the eyes followed by a rapid forward jerk, and it is considered abnormal when seen as the patient follows a smoothly moving object. It is brought out most readily when ocular movements are slow and may be unilateral. Its presence indicates the existence of organic disease of the brain and it is seen most strikingly, perhaps, in chronic encephalitis. *A. J. B. Goldsmith.*

435. Nature of Functional Recovery Following Regeneration of Oculomotor Nerve in Amphibians. R. W. SPERRY.

Vide abs. 489.

436. Complete Unilateral Ophthalmoplegia due to Primary Carcinoma of the Sphenoidal Sinus. (Sphenoidal Fissure-Optic Canal Syndrome with Complete Ophthalmoplegia; Report of a Case). I S. TASSMAN.

Vide abs. 417.

437. Interference Between Opto-kinetic Nystagmus and Caloric and Post-Rotatory Nystagmus simultaneously induced in Man. (Ricerca sulla interferenza tra nistagmo otticinetico e nistagmo calorico e post-rotatorio contemporaneamente provocati nell'uomo.)

L. COJAZZO and O. SALA. *Riv. Oto-Neuro-Oftal.*, 22, 51-65. Jan.-Feb., 1947. 34 refs.

The authors studied the phenomena of interference in the simultaneous production in normal individuals of an opto-kinetic and caloric or post-rotatory nystagmus. The opto-kinetic nystagmus was induced in the standard way by a rotating cylinder; for caloric stimulation they used Veits's method and for rotation Buys-Fischer's. Their experiments showed that: (a) the o.k.n. constantly inhibits a provoked vestibular nystagmus of opposite direction and takes its place; (b) the suppression of the labyrinthine nystagmus lasts as long as the opto-kinetic stimulus in the opposite direction is active; if the latter ceases, the vestibular nystagmus reappears with its former features, if its normal duration period has not elapsed; (c) the normal phase-development of the post-rotatory nystagmus is not modified by interference by the o.k.n.; (d) the caloric nystagmus having subsided, a "facilitation" (Bahnung) of 1-2 minutes is instituted for the o.k.n. towards the side to which the preceding caloric nystagmus had been directed. *C. Guiseppe.*

XXXIII. PUPIL AND ITS CENTRAL CONNECTIONS

438. Binocular Summation within the Nervous Pathways of the Pupillary Light Reflex.

L. C. THOMSON. *J. Physiol.*, 106, 59-65. 1947.

The degree of constriction of the pupil which results from stimulation of the retina of a single eye by light was found to be significantly less than that obtained when both eyes were stimulated. The effect of binocular summation was equivalent to that of increasing the area of the stimulating flash between two and four times and using a single eye throughout. *British Abstracts.*

439. Mydriatics: Some Developments.

A. D. MACDONALD. *Practitioner*, 158, 413-417. May, 1947. 10 refs.

The author gives a brief résumé of the various drugs used to produce mydriasis from the point of view of the pharmacologist. He divides them into four types—the belladonna group (atropine, homatropine, eucatropine and eumydrine), the sympathomimetic drugs (adrenaline, ephedrine and amphetamine), the local anaesthetics (cocaine), and the spasmolytics (papaverine and its synthetic substitutes, syntropan, trasentin, antergin, benadryl and their derivatives). Whereas these latter drugs may be of great interest and value in relieving bronchial spasm, in urticaria and other allergic manifestations, they are relatively unimportant as mydriatics.

A final section deals with synthetic mydriatics such as the benzilic esters of choline. Of these E.3 (benzyl-*oxyethyl*-dimethyl-ethyl-ammonium chloride) or lachesine, which has been developed in England, and di-*n*-butylcarbamylcholine, or dibutolin, which has been developed in America, receive special note. He concludes that the clinical value of these drugs is not so far encouraging, and although of occasional use, there is still room for the development of the ideal mydriatic in view of the disadvantages of those of the atropine group.

Stewart Duke-Elder.

440. A New Synthetic Mydriatic.

I. MANN. New England Ophthal. Soc. Reported in *Amer. J. Ophthal.*, 30, 60. Jan., 1947.

A new synthetic mydriatic is described; known by the code name of E3 and commercially as Lachesine, the drug is a benzylic ester of hydroxy-ethyl-di-methyl-ethyl ammonium chloride; it is used in a 1% solution. It lies between atropine and homatropine in its strength of action. It can also be used without signs of sensitivity in cases of atropine or homatropine irritation.

A. G. Leigh.

441. Rehabilitation of Unilateral Mydriasis in Head Injuries. (Réhabilitation de la mydriase unilatérale en traumatologie crânienne.)

P. GOINARD, A. LARMANDE and P. DESCUNS. *Presse Méd.*, 25, 281-282. April 26, 1947.

Mydriasis after head injury is a sign of great importance if local causes can be excluded. When unilateral or predominantly unilateral, even if it is not permanent, it indicates a homolateral brain lesion (hæmatoma, cerebral œdema, or meningitis).

S. Vallon.

XXXIV. HIGHER VISUAL PATHWAYS
AND CENTRES.

442. Arachnoiditis.

D. KRAVITZ. *Arch. Ophthal.*, 37, 199-210. Feb., 1947. 19 refs.

Arachnoiditis is an inflammation of the leptomeninges which may

be localised or diffuse. A brief historical survey precedes a description of the ætiology. Infection is the most common cause, usually of the nasal sinuses or ears. Syphilis and tuberculosis may be responsible and more rarely rheumatic fever, influenza and dental infections. Trauma may be a causal factor, though there is little definite relation between intensity, location, and time interval between the injury and subsequent arachnoiditis. The pathological changes are either adhesive or cystic. The former appear as dense adhesions, while in the latter collections of cerebro-spinal fluid become walled off in the subarachnoid space. This space may be entirely obliterated. The optic nerves and chiasm are usually involved in the optico-chiasmic type of the disease and the appearance of the discs is intermediate between primary and secondary atrophy. The symptoms vary according to the location and severity of the lesion. Headache is common and in the chiasmic form vision diminishes rapidly in association with atrophy of the optic nerve. A central scotoma is present in many cases, and various types of field defects are found. Symptoms resembling chromophobe adenoma of the pituitary or suprasellar cysts may be present, and in the more anterior forms a typical Foster Kennedy syndrome. The prognosis is good in most cases if surgical treatment is employed at an early stage. This treatment is essential if the vision is threatened, even in syphilitic cases, and it is pointed out that arachnoiditis may be responsible for the defective vision in cases of tabes. Details are given of nine cases of arachnoiditis, not all of which involved the chiasmical area. It is emphasized that localized arachnoiditis can simulate a tumour of any part of the brain, but that field defects are less likely than with neoplasms because the lesion is superficial in the membrane covering the brain.

A. G. Cross.

443. Drainage in Infected Cavernous Sinus Thrombosis.

W. A. FAIRCLOUGH. *Australian and New Zealand J. Surg.*, 16, 193-196. Jan., 1947.

The author describes the differential diagnosis between cavernous sinus thrombosis and orbital cellulitis, stressing the fact that œdema of the mastoid area is a certain sign of cavernous sinus thrombosis, and that a focus of infection on the skin surface is almost always present in the latter condition, whereas orbital cellulitis usually originates from one of the paranasal sinuses. Whereas cavernous sinus thrombosis was almost always fatal before the advent of the sulfa drugs and penicillin, now the combination of these drugs plus surgery may save the patient.

A case report follows demonstrating a method of draining the cavernous sinus by means of artery forceps introduced through an incision in the conjunctiva and passed backwards through the length of the orbit and into the sinus.

Seymour Philips.

444. Atrophy of the Supra-optic and Paraventricular Nuclei after Interruption of the Pituitary Stalk in Dogs.

W. J. O'CONNOR. *Quart. J. Exp. Physiol.*, 34, 29-42, 1947.

Axons of the cells of the paraventricular as well as of the supra-optic nuclei enter the pituitary stalk and reach the pars nervosa.

No correlation was observed between the degree of polyuria resulting from the operation and the numbers of atrophied cells of the supra-optic nuclei.

British Abstracts.

445. Retinal Index of "Cerebral Vascular Compensation".
(Pressione arteriosa retinica e compressione della carotide comune: Sindrome tonometrica retinica da mancato circolo carotideo. Indice retinico di compenso cerebrale e legatura della carotide comune.)

M. MILLETTI and G. DI LUCA. *Riv. Oto-Neuro-Oftal.*, 22, 1-31. Jan.-Feb., 1947. 13 refs. 1 fig.

The authors have performed carefully controlled experiments on 42 subjects of ages ranging from 15 to 75; they conclude that these experiments authorize the classification of the behaviour of diastolic retinal arterial pressure (R.A.P.), after compression of the ipsilateral common carotid artery, into two groups:

Group I (juvenile type): after compression of the ipsilateral common carotid for 2 minutes the diastolic R.A.P. decreases less than 20%.

Group II (senile type): the decrease of diastolic R.A.P. in the same conditions is more than 20%.

The behaviour of diastolic R.A.P. is considered by the authors as a test of the entity of collateral blood supply of the brain (circulation of compensation); they establish a "retinal index of cerebral compensation" (I) according to the formula:

$$I = \frac{(D - d \times 100)}{D}$$

(D = normal diastolic R.A.P.; d = diastolic R.A.P. after compression of the ipsilateral carotia for 2 minutes.)

The authors apply this index to the prognosis of ligature of the common carotid and to the choice of method for this surgical intervention. Founding their deductions on the lowering of diastolic R.A.P. in the 42 subjects in consideration of their age they propose the following criteria of judgment:—

- (1) If I is not above 20, cerebral compensation is good and ligature of carotid may be performed by any method.
- (2) If I varies from 20 to 50, cerebral compensation is doubtful so that preference should be given to those methods of ligature which cause gradual occlusion of the vessel.
- (3) If I is above 50, ligature may be dangerous, no matter what method is used.

The authors think that the modifications of retinal arterial pressure following compression of the common carotid are independent of direct stimulation of the carotid sinus, and that they rather represent the result of a complex mechanism of autonomic regulation of the brain vessels due to stimuli elicited by the altered pressure following the occlusion of the common carotid.

The essay contains a general outline of the experimental findings in 42 patients; in addition, there is a diagram summarizing the variations in the lowering of diastolic retinal arterial pressure in relation to the age of the 42 subjects examined.

C. Guiseppe.

446. Malignant Lymphoblastoma (Lymphoblastome malin).

BAMATTER. *Rev. d'Oto-Neuro-Ophthal.*, 19, 62-63. Jan., 1947.

Bamatter reports a case of a child, who at thirteen months of age developed proptosis of the left eye and bilateral optic atrophy. X-ray of the skull showed enlargement of the sella turcica with partial destruction of the clinoid processes. Areas of calcification were also present. Encephalography revealed an internal hydrocephalus.

The condition was diagnosed as typical of a craniopharyngioma and radiotherapy was commenced. The patient's general condition improved, although the visual acuity remained unchanged.

Nearly a year later, however, metastases appeared in the skull and also in the femurs. Biopsy followed by histological examination showed the condition to be, histologically, a malignant lymphoblastoma. Examination of the blood and of the sternal marrow showed no abnormality apart from a secondary anæmia.

The differential diagnosis is discussed.

It is emphasised that the main interest of the case lies in the fact that at the commencement the X-ray picture was typical of a craniopharyngioma.

G. I. Scott.

447. Ocular Symptoms in Subarachnoid Hæmorrhage. (I sintomi oculari nell'emorragia subaracnoidea.)

G. CARDARELLO. *Rassegna Ital. d'Ottal.*, 16, 50-63. Jan.-Feb., 1947. 33 refs.

After a short review of the general symptoms and of the ætiology of subarachnoid hæmorrhage the author presents 3 cases in which ocular disturbances occurred. Two cases exhibited abnormalities of the extrinsic and intrinsic musculature, and one case had a retinal lesion. The various ocular signs and symptoms are discussed with particular reference to their occurrence, pathogenesis, and localizing value.

N. Pagliarani.

448. Pathogenesis of Fundus Changes in Skull Injuries.

S. KAMINSKAYA-PAVLOVA. *Amer. J. Ophthalm.*, 30, 613-615. May, 1947.

Optic atrophy and other fundus lesions may occur after injury of the skull as the direct result of trauma. They may also occur where a latent pathological state is activated as a result of the injury. Examples are given of luetic atrophy occurring after head injury, of optic atrophy occurring in oxycephaly after head injury, of retinal arterial spasms following head injury in a patient with Raynaud's disease, and of papilloedema in a hypertensive patient after head injury. A case is noted which developed optic atrophy following a third head injury, the vision having been unaffected after the previous two traumata. The author concludes that very full investigation is necessary in all cases of head injury which develop fundus changes. *A. G. Cross.*

449. Visual Field Defects due to Head Injuries.

J. S. MCGAVIC. *Surg. Gynaec. and Obs.*, 84, 823-827. April 15, 1947. 6 refs.

The visual pathways in the brain are so extensive that an injury to any part of the cranium may result in defects in the field of vision. The anatomy of the visual tract from the retina to the occipital cortex is described. Factors which cause difficulty in the interpretation of traumatic visual field defects are: (1) depressed skull fractures produce effects which may be reversible by elevation of the fragments; (2) foreign bodies found at one site may have traversed important structures in reaching this site; (3) blood vessels may be damaged so that the effect may be that of a vascular lesion. (4) oedema may cause transient field defects; (5) brain abscess may complicate an injury.

Fatigue, neurosis, injury to speech or auditory apparatus, and poor central vision may cause difficulty in the plotting assessment of visual fields after head injury. Details of seven cases are given to illustrate the type of field defect in various occipital injuries. The author concludes with a plea for the keeping of careful clinical records of all cases of head injury and for the correlation of visual field defects with post-mortem appearances when the opportunity occurs. *A. G. Cross.*

450. Traumatic Cyst with Amaurosis (Kyste traumatique avec amaurose).

A. JENTZER. *Rev. d'Oto-Neuro-Ophthal.*, 19, 63-64. Jan., 1947.

The author reports a case of a young man who suffered a fairly severe head-injury, although without loss of consciousness or evidence of fracture. A year later he began to have headaches and epileptic fits. These attacks responded fairly well to treatment with bromides, but seven years later the attacks became increasingly

frequent and the following year the vision of the right eye began to fail.

On examination he showed bilateral optic atrophy, with marked impairment of vision in the right eye. A tentative diagnosis was made of intracranial tumour.

Ventriculography revealed a large cyst in the posterior part of the right cerebral hemisphere.

The cyst was ultimately closed at operation, and histological examination showed the condition to be post-traumatic in nature.

Certain complications, which arose during the course of treatment, are discussed. *G. I. Scott.*

XXXV. OPHTHALMIC ASPECTS OF OTHER CENTRAL NERVOUS DISEASES.

451. Retinal Periphlebitis Associated with Paraplegia.

B. P. SILFVERSKIÖLD. *Arch. Neurol. Psychiat.*, 57, 351-357. March, 1947. 6 refs.

In 3 young men of ages 27, 30 and 35, retinal periphlebitis with recurrent vitreous hæmorrhages was followed after intervals of a few weeks in 2 cases, and of 2 years in the third, by subacute paraplegia with blood pleocytosis. All cases later improved. The ætiology of the condition is obscure. *A. J. B. Goldsmith.*

452. The Clinical Picture of Retrobulbar Neuritis in Intracranial Tumours. (Klinisk bild av retrobulbärneurit vid intrakraniella tumörer.)

L. LARSSON and B. NORD. *Nordisk Medicin*, 34, 1059-1065. May 2, 1947. 10 figs. 17 refs.

In the University Eye Clinic of Lund (Sweden), 8 cases of retrobulbar neuritis were observed, all of them caused by pressure upon the optic nerve in its pre-chiasmatic course by an expanding intracranial process. The 8 case histories (presented in full with figures of visual fields) are very illustrative of the fact, which, alas, is often forgotten, that basal intracranial tumours in their initial stages sometimes cause a retrobulbar neuritis, more often bilateral than unilateral. Half of the cases showed spontaneous improvement of vision and were mistakenly diagnosed as multiple sclerosis.

Craniotomy showed the tumours to be of the following nature: 6 cases were meningiomata localized to the olfactory groove (2 cases), suprasellar region (2 cases), lesser wing of the sphenoid (1 case) and subfrontally (1 case). Only one case was a chromophobe pituitary adenoma and one case a hypophyseal duct tumour.

This paper shows that the neuro-ophthalmologists' attention should always be directed towards intracranial tumours as a possible cause of retrobulbar neuritis, especially in cases affecting both eyes and with an atypical, protracted course. Very careful examination including encephalography is required in order to avoid the overlooking of an operable basal intracranial tumour. *E. Godtfredsen.*

453. An Uncommon Case of Sturge-Weber's Disease. K. RØRVIC.
Vide abs. 483.

454. Meningeal Reactions in Sympathetic Ophthalmia. L. CORCELLE.
Vide abs. 341.

455. The Oculostatic Syndrome. (Det Okulostatisko syndromet.)
 O. PARLAND. *Nordisk Medicin*, 34, 1044-1050. May 2, 1947. 2 refs.

The author gives a brief survey of the disturbances following closed cerebral trauma especially localized to the brain-stem with simultaneous lesions of the vestibular apparatus and the ocular movements. According to the Russian Professor Gurevitj from Moscow, it is very easy to diagnose an organic disease of the vestibular apparatus by investigations of the eyes and from the complaints of the patients. The symptoms under review are the following: (1) Disturbances when reading. The nystagmoid movements of the eyes during reading cause headache and giddiness. (2) Giddiness and nausea in trains and cars. Here the optokinetic nystagmus causes vestibular symptoms. (3) Giddiness and nausea in the cinema. Here the constant slight movements of the eyes cause the vestibular symptoms. (4) The oculostatic phenomenon. The patient stands in a position as when the Romberg test is performed, but with open eyes, and fixes a moving object. The test is positive if the patient totters or falls.

The exact topical localization of the lesion is difficult, but it is probably located in the system of the supravestibular nuclei, especially in the region between the vestibular and oculomotor nuclei.

Parland has investigated 23 soldiers claiming disablement benefit on account of cerebral trauma contracted in the war. He found the oculostatic syndrome in 9 out of 16 cases with other organic neurologic symptoms originating in the brain-stem. 7 neurotic cases did not show the oculostatic syndrome. Parland calls attention to the syndrome not only for its diagnostic value, but also because of its importance in insurance and pension assessments.

E. Godfredsen.

456. On the Occurrence of Oculogyric Instability in Multiple Sclerosis and other Diseases of the Nervous System.

J. GREVE. *Nordisk Medicin*, 33, 557-558. Feb., 1947. 4 figs. 1 ref.

The symptom of oculogyric instability is briefly mentioned as a special form of nystagmus and irregular movements when the patient fixes a small object moved in circles before him. It has been described as an early symptom in multiple sclerosis by V. A. Jensen, the Danish ophthalmologist (*Nordisk Medicin*, Vol. 21). Greve investigated this phenomenon in the neurological department of the Rikshospital, Oslo. Among 25 normal persons only one showed

slight oculogyric instability. Among 600 patients suffering from different neurologic diseases, 37 out of 50 cases recognized as multiple sclerosis presented oculogyric instability (74%). The symptom may be present in other neurological diseases. Out of 85 cases of epilepsy, traumatic encephalopathy, intracranial tumours, etc., studied by the author 50% presented oculogyric instability.

E. Godtfredsen.

457. Toxic Encephalopathy from Thallium Acetate. (Encefalitis tóxica por acetato de talio.)

P. D. MARTINEZ. *Bol. Med. del Hosp. Infantil (Mexico)*, 4, 203-206. March-April, 1947.

A rare condition is described of encephalopathy developing in a child after the treatment of tinea capitis by thallium acetate (7.5 mg. per kilo body weight). The symptoms were a functional weakness of both limbs, fever, vomiting, convulsions and stupor with optic neuropathy. After 23 days the child was discharged apparently normal except for the pallor of the optic discs. *Stewart Duke-Elder.*

458. Arsenical Encephalopathy. An Unusual Case occurring in the Treatment of Congenital Syphilis.

G. HIPPS and R. GOLDBERG. *Brit. Med. J.*, 1, 296-297. March 8, 1947. 16 refs.

Another case of arsenical encephalopathy, occurring in a 20-year-old serum-positive congenital syphilitic suffering from interstitial keratitis and iridocyclitis, is comprehensively described. There is, unfortunately, no record of a preliminary cerebrospinal-fluid examination. Systemic treatment had been begun with 1.7 million units of penicillin 3-hourly and followed by 0.3 g. of neo-arsphenamine twice weekly for 5 weeks. After an interval of 56 days a similar second course was begun, and the first toxic symptoms were manifest 1 day after the fifth injection.

Malaise and frontal headache for 24 hours were followed by epileptiform convulsions heralded by an aura of spots before the eyes and accompanied by a cry, tongue-biting, and incontinence of urine and faeces, consciousness being regained after 30 minutes. Six of these occurred on the second night, after which the patient became comatose, with absent tendon reflexes, a bilateral extensor plantar response, and conjugate deviation of the eyes to the right. Coma deepened and the temperature rose to 105° F. (40.6° C.), at which level it remained until death 5 days from the onset. Post-mortem examination revealed cerebral congestion, pleural petechial hæmorrhages, and bronchopneumonia. *R. R. Wilcox.*

459. Electro-encephalographic Changes in Migraine.

D. J. DOW and C. W. M. WHERRY. *Lancet*, 252, 52-54. July 12, 1947.

Of 51 cases of migraine studied by electro-encephalography, abnormalities were found in 30: generalized dysrhythmia in 14, symmetrical bilateral episodic activity in 12, and a persistent focal abnormality in 4. These findings are compatible with a cerebral vascular basis for this disease. *Stewart Duke-Elder.*

460. Progesterone in the Treatment of Migraine.

INDER SINGH, IINDERJIT SINGH and DEVINDER SINGH. *Lancet*, 252, 745-747. May 31, 1947. 9 refs.

The ætiology of migraine is complex, and inherited individual susceptibility is an important factor. In some cases an endocrine abnormality may be responsible, as in thyrotoxicosis. The onset of some cases of migraine at puberty and its disappearance at the menopause, as well as its association with the menstrual cycle suggest that it may be due to an imbalance of sex hormones. Details are given of 23 cases of migraine in women in whom æstrogen hyperactivity was manifested by disturbances of menstruation. If these were not present, a migrainous attack could be induced by oral or parenteral administration of 2-10 mg. of æstradiol (clinæsterol). Induced attacks could be relieved by giving 5-15 mg. of progesterone (lutocyclin). Spontaneous attacks could also be relieved and they required a dose of progesterone directly proportional to the severity of the symptoms of æstrogen hyperactivity. Migraine of this type tends to be in abeyance during pregnancy, when there is an increased excretion of progesterone in the urine.

It is suggested that æstrogen may cause headache in one of three ways: (1) By causing temporary enlargement of the pituitary gland. (2) By its effect on blood vessels. (3) By retention of sodium and chlorides in the body.

A. G. Cross.

461. Ocular Manifestations of Psychosomatic Disorders.

D. O. HARRINGTON. *J. Amer. Med. Assoc.*, 133, 669-675. March, 1947. 18 refs.

The psychogenic origin of many ocular syndromes is stressed and certain conditions are discussed in detail. The majority of these are changes in the eye, which are the result of vasomotor disturbances secondary to imbalance of the autonomic nervous system. Vaso-spasm, which occurs in the extremities in conditions such as Raynaud's disease, is capable of producing physiological, and even permanent pathological changes in the retina, and retinal arteriolar spasm has been described in Raynaud's disease. These cases were seen in large numbers among members of the armed forces in the late war. Amaurosis fugax, which may vary from dimness of vision lasting a few seconds to complete visual loss of some minutes duration, is due to retinal or cerebral anoxia, and is usually associated with anxiety states. Ciliary spasm is considered to be psychogenic in origin. Subjects with migraine demonstrate typical personality features and an emotional background in keeping with the vasomotor origin of the disturbance. The condition is worse under conditions of stress and visible vasocstriction of the retinal arterioles can be demonstrated during severe attacks. Neuro-circulatory asthenia is commonly associated with neurosis, and many cases exhibit visual disturbances such as amaurosis fugax, angio-

spastic retinopathy and hysterical amblyopia. Central angio-spastic retinopathy comprises visual loss, with macular edema, foveal pigmentation, and "hole at the macula," and psychic trauma is regarded as an important ætiological factor. There is vasomotor instability in all cases. Some recovery of the initial lost vision may occur, but a very small residual central scotoma is common. The psychological aspects of glaucoma are discussed and examples given of two cases in which rise of intra-ocular tension in association with emotional disturbance was clearly demonstrated, and it is suggested that this factor should be considered in therapy. The article ends with some description and discussion of the ocular manifestations of hysteria. It deprecates the diagnosis of hysterical amblyopia by a process of exclusion, and advocates full psychiatric evaluation. The importance of "suggestion" in treatment is stressed, but it is pointed out that "cure" by this means may only be transient, and that complete psychotherapy may be required. There is an abstract of a discussion which followed the reading of the paper and in which speakers laid further emphasis on certain points already mentioned.

A. G. Cross.

462. Automatic Asynergic Oculogyric Movements in the Psychoses
Kinetic Strabismus. Diagnostic Value.

L. MICHAUX and R. GRANIER. *Ann. Med. Psychol.*, 105, 288-290. March, 1947.

Jerky, involuntary, purposeless lateral ocular movements are described, occurring in the major psychoses, especially dementia precox. The head is not turned and movement of the eyes is asynergic, a squint developing with the lateral movement. They disappear with remissions of the disease. The cause is unknown but they indicate a disharmony or claudication of the cerebral hemispheres.

A. J. B. Goldsmith.

463. A Study of Tubular and Spiral Central Fields in Hysteria.

T. H. EAMES. *Amer. J. Ophthalm.*, 30, 610-611. May, 1947. 8 refs.

Examination of 193 schoolchildren on the tangent screen at 750 mms. revealed tubular central fields in 9%, the average age of whom was 9 years and 11 months. Of these children 44% exhibited amblyopia of some degree, and in 77% hysteria was suspected. One child presented a spiral field but displayed no other evidence of hysteria or neurasthenia. The conclusions are drawn that tubular central fields occur frequently, but not always in cases of hysteria, and that the presence of tubular central fields and amblyopia form a more reliable indication of possible hysteria than either sign alone.

A. G. Cross.

464. Personality Patterns in Glaucoma Patients. H. L. HIBBELER.
Vide abs. 384.

XXXVI. OPHTHALMIC ASPECTS OF SYSTEMIC DISEASE

465. Ocular Manifestations of Mumps.

J. FIELDS. *Amer. J. Ophthal.*, 30, 591-595. May, 1927. 16 refs.

Dacryo-adenitis is the commonest ocular manifestation of mumps. The swellings are bilateral and painful and cause chemosis of the conjunctiva. Complete resolution occurs and warm compresses are the useful treatment. Iritis, iridocyclitis and optic neuritis also occur, as does also keratitis, though the latter complication is rare, only nine cases being reported in the literature.

The author adds a case report of mumps keratitis from his own practice. The corneal opacities occurred in the substantia propria, chiefly in the posterior third. There was no vascularization, and nine days after the onset the cornea had cleared and vision had improved from hand movements to 20/20. *Seymour Philips.*

466. Relapsing Fever in Cyrenaica.

N. F. COGHILL, J. LAWRENCE and I. D. BALLANTINE. *Brit. Med. J.*, 1, 637-640. May 10,

1936, the authors point out the occurrence of
with meningitis. *Stewart Duke-Elder.*

467. Hypertensive Retinitis.

A. J. BEDELL. New England Ophthal. Soc. Reported in *Amer. J. Ophthal.*, 30, 60-61. Jan., 1947.

The changes occurring in hypertensive retinitis are described. The broken appearance of the star lines in the macular area appearing prior to death is a sign of great prognostic significance. *A. G. Leigh.*

468. A Contribution to the Study of Experimental Hypertensive Retinopathies. (Contribucion al estudio de les rinopatia hipertensivas experimentales.)

N. B. GONZALEZ. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 213-217. March, 1947. 3 drawings in colour. 2 retinal photographs.

The author produced renal ischaemia experimentally in dogs which resulted in hypertension; there was no alteration in the urine, nor in the blood urea, but the fundi gradually presented the clinical picture of essential hypertension. Microscopic examination showed hypertrophy of the middle coats of the arteries with hyaline degeneration and hyperplasia of the endothelium. In a second series both kidneys were excised: the animals died 4-5 days later, the blood urea was high, and the blood pressure normal. No retinal changes were observed. In a third series the author combined renal ischaemia and nitrogen retention by ligature of both ureters. The dogs survived 3-4 days after operation; arterial hypertension was observed a few hours after operation, and just before death the blood urea became high. There was a marked spasm of the retinal arteries, with pallor of the discs and the fundi, but without hæmorrhage or œdema.

His conclusions are as follows. In total nephrectomy the blood pressure is not raised and there are, therefore, no retinal changes. When the ureters are ligatured, bilatéral hydronephrosis produces renal ischæmia and this combined with uræmia gives rise to vascular constriction. Survival, however, is so short that hæmorrhages or œdema are not produced. He thinks the clinical significance of these observations lies in the fact that extensive retinal changes are not indicative of the severity of disease but of its duration, and that retinal changes are slighter in the more acute and fatal conditions. Similarly in acute eclampsia with high blood pressure, organic retinal changes are rarely seen while they occur in the more chronic cases.

E. E. Cass.

469. **The Results of Operations for Arterial Hypertension.** (Indikationer för och resultat av operative ingrepp vid hypertoni.) S. HAMMARSTROM. *Svenska Läkartidningen*, 44, 141-159. Jan. 17, 1947. 49 refs.

Hammarstrom has followed up 101 cases of arterial hypertension operated on between 1940-46 in the Neurosurgical Department of *Serafimer Lazarettet*, Stockholm (Professor Olivecrona). Most of the patients were operated on according to Smithwick's method (transdiaphragmatic sympathectomy) and only a smaller number according to Peet's method (supradiaphragmatic sympathectomy).

63 patients presented hypertensive retinopathy. In 20 cases with retinopathy before the operation, examination of the fundus, 6 months to 6 years after sympathectomy showed that the retinal changes had disappeared in 15 and improved in 2 cases. The author does not mention an ophthalmological follow-ups for all the cases operated upon but states that the retinopathy, like the electrocardiographic changes, improved in most of the cases. Regarding the arterial hypertension itself nearly half of the cases improved and in two-thirds the cerebral symptoms improved. 16 out of 21 cases who died during the period of observation presented retinopathy.

E. Godtfredsen.

470. **Some New Considerations on Arterio-Capillary Circulation of the Retina in General Hypertension.** (Nouveaux regards sur la circulation artériolo-capillaire et plus particulièrement rétinienne dans l'hypertension artérielle.) P. BAILLART. *Press. Méd.*, 10, 110-111. Feb. 15, 1947.

By measuring the blood pressure in the retinal arteries, one gets a fair idea of the tone of the vessel walls, since the muscular coat is here very strong. In most cases of general hypertension, the pressure in the retinal arteries is high (more than half of the brachial pressure), even when there is no narrowing of the vessels. A very high retinal pressure points to a severe hypertension. The first

symptom of general hypertension may be an increased retinal blood pressure. On the other hand, the retinal pressure may be lowered, indicating a collapse of the tone of the retinal arterioles; this has a poor prognosis, since it may lead to the collapse of the central vein with a threat of thrombosis. In this case, there is a similar process in the cerebral circulation with possible serious consequences.

S. Vallon.

471. Central Angiospastic Retinopathy. M. A. ZELIGS.
Vide abs. 350.

472. Corneal Lesions in Hodgkin's Disease. Report of a Case. P. MATTEUCCI
Vide abs. 329.

473. Intra-Ocular Tension and its Influence on the Appearance of Retinal Hemorrhages in Diabetics. (La tension endo-oculaire y su influencia sobre la aparición de la hemorragias de retina en los diabeticos.)

J. M. V. ORTIZ. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 288-298. March, 1947.

The author has examined the tension in the eyes of 99 diabetic patients (198 eyes), measurements being taken between 9 and 11 a.m.; 30 had an ocular tension of less than 19 mg. Hg. (Schiotz). He found that the use of insulin tended to raise the intra-ocular tension. It is low in venous obstruction and in the presence of hemorrhages, but high when there is obstruction and no hemorrhages.

He points out that in cases of arteriosclerosis the tension is low, and is high in cases of phlebosclerosis. He found 11 glaucomatous eyes amongst these cases with retinal hemorrhages in which vascular sclerosis and arterial hypertension were present, and suggests that the hypertension in cases of diabetes is due to phlebosclerosis.

E. E. Cass.

474. The Tourniquet Test in Diabetic Retinitis. (Le signe du lacet dans la rétinite diabétique.)

M. LEVRAT and L. PAUFIQUE. *Presse Méd.*, 29, 325. May 17, 1947. 10 refs.

The tourniquet test is generally positive in diabetic retinitis, both in cases with or without hypertension and renal disturbances. When there is no hypertension, it proves a vascular disturbance of the peripheral vascular system. It may precede the retinitis and may, therefore, serve as a warning of impending retinitis.

S. Vallon.

475. Unilateral Exophthalmos, an Early Sign in Thyrotoxicosis.

W. H. KISNER and H. MAHORNER. *Surg. Gynaec. and Obstet.*, 84, 326-331. March, 1947. 3 figs., 20 refs.

Five cases are reported in each of whom unilateral exophthalmos was a prominent feature of the disease. The possible causes of exophthalmos are discussed as are pathological and clinical findings in the thyrotoxic and thyrotropic types of case. A. J. B. Goldsmith.

476. Alteration in Critical Fusion Frequency in Tobacco Intoxication. (Les modifications de la fréquence critique de fusion au cours de l'intoxication par le tabac.)

F. ROUSSEL and R. WEEKERS. *Ophthalmologica*, **113**, 215-223. April, 1947. 4 figs. 5 refs.

Nicotinic amblyopia is characterized by a lessening of the critical frequency of fusion; this is most marked in the region of the cæco-central scotoma which may have a fusion frequency of 10 per second, with illumination of 60 lu., while the surrounding retina may have frequencies of 30-40 per second. The changes in fusion frequency parallel the density of the scotoma and its clinical improvement, but alterations may still be found when there is no campimetric abnormality to 1/1000. It is not yet known whether the changes are pathognomonic of nicotinic intoxication. *A. J. B. Goldsmith.*

477. Amblyopia Due to Dietary Deficiency.

A. D. BEAM. College of Physicians of Philadelphia; Section of Ophthalmology. Reported in *Amer. J. Ophthal.*, **30**, 66-70. Jan., 1947.

Eight cases are presented in which the deficiency of vitamin B₁ appears to have been the ætiological factor; signs of beri-beri were present in each case; ten hours hard work a day with a high carbohydrate intake increased the requirements of vitamin B₁, the intake of which was negligible. There is lack of evidence to support the influence of other avitaminosis on this form of amblyopia.

A. G. Leigh.

478. Ophthalmological Experiences from the Camps for War-Prisoners in Java.

E. DE VRIES. 110th Meeting Netherlands Ophthal. Soc., June 16, 1946. Reported in *Ophthalmologica*, **113**, 241-247. April, 1947.

A general survey of camp-amaurosis by an ophthalmologist who was himself a prisoner. It occurred almost exclusively in camps in the plains, very rarely in mountain camps, and never in Japan; it was very rare in women's camps. It arose mostly after a period of heavy labour in the sun, and might develop very rapidly. Subjective and objective findings are as described by other observers in this field; the author emphasizes that the foveal reflex always disappeared. He discusses possible ætiological factors without coming to any definite conclusions.

He describes three other conditions: (1) Accommodative disturbances, premature presbyopia. (2) Temporary astigmatism. (3) A peculiar condition of the cornea, in which the reflected image of a Placido's disc looked like wicker-work.

In the discussion Moorees emphasizes the frequency of macular pigmentary changes. Two speakers, on the grounds that Australians, normally heavy meat eaters, suffered more than the English, suggested protein deficiency as an important factor.

A. J. B. Goldsmith.

479. Optic Atrophy in Hong Koog Prisoners of War.

P. G. BELL and J. C. O'NEILL. *Can. Med. Assoc. J.*, 56, 475-481. May, 1947.

This report deals with the ophthalmic examination of 375 men who were held prisoners by the Japanese for nearly four years.

Of these, 95 showed partial optic atrophy. Two medical officers, who were prisoners with the men, report that rations were reduced to 1,700 to 2,300 calories a day, and during some periods ran as low as 1,200 to 1,500 calories a day. The men suffered from dysentery, malaria, jaundice, diphtheria, beriberi, pellagra, "hot feet," and leg sores. During captivity 60% of the men experienced a decrease in visual acuity at some time or another. This last symptom was particularly noticeable when the caloric intake was very low and mouldy rice was eaten. Vitamin supplements improved some of the signs due to vitamin deficiencies but did not greatly change the blurring vision. The greatest recovery of vision occurred when the caloric value of the diet increased.

The positive ophthalmic findings were decreased visual acuity, 95 cases, a dense centro-caecal scotoma, 72 cases, slight contraction of the peripheral field, 71 cases, and pallor of the temporal quadrant of the optic disc. Visual acuity ranged as low as 20/1000. Eleven cases had an acuity of 20/20 in the better eye. 15% showed some difference in the degree each eye was affected, in the remainder both eyes suffered about equally. The central scotoma was charted with a 2 mm. white and a 6 mm. red test object, at 2,000 mm. distance. The scotoma was small in mild cases, larger in severe cases. It always had a tail pointing towards the blind spot. The temporal field showed a loss of about 20° in the more severe cases, when tested with a 2 mm. white test object at 330 mm. Pallor of the optic disc was frequently mild and was a poor index of the degree of visual loss.

The ocular defects did not seem directly related to vitamin deficiencies, concurrent infections, use of tobacco and exposure to bright light. The use of polished mouldy rice appeared to be a factor. Certain optic nerves may be biologically, or anatomically weak and susceptible to an unknown B complex deficiency, proteinæmia or lipæmia, and a toxin from musty rice.

Most of the men, whether their vision was good or bad, reported that reading produced tiring and burning of the eyes. Of the men developed corneal ulcers during captivity, the number of severe, residual scars was slight. There was no evidence that cataracts were produced by the imprisonment.

The men were given a high protein, high caloric diet and vitamins added. The general condition improved. Optic atrophy was unaffected. A +6.00 to +14.00 diopters.

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compensates to

spectacle lens over one eye was found to be most helpful for reading. About 50 cases, who returned for a re-check, showed no improvement or deterioration in vision.

C. McCulloch.

480. Pathogenesis of the *Læsio Ganglii Fasciculi Optici*. J. de RUYTER.

Vide abs. 362.

481. Formation of Capillaries and other Tissue Changes in the Cornea of the Methionine-Deficient Rat.

J. L. BERG, E. R. PUND, V. P. SYDENSTRICKER, W. N. HALL, L. L. BOWLES, and C. W. HOOK. *J. Nutrition*, 33, 271-286. March, 1947. 12 figs. 14 refs.

Histological and biomicroscopical studies show that rats fed on diets deficient in the sulphur-containing amino-acids develop vascularization of the cornea, at first in the subepithelial layers and later in the deeper tissues. This is accompanied by œdema of the epithelium and of the substantia propria. The administration of riboflavin in large doses has no effect on the corneal changes.

A. J. B. Goldsmith.

482. Pink Disease : A Review of 65 Cases.

T. N. FISHER. *Brit. Med. J.*, 1, 251-253. Feb. 15, 1947.

Sixty-five cases of pink disease are described ; 53 patients recovered completely and 9 died (14.5%). It shows no seasonal incidence ; the highest age incidence was between 5 and 12 months. The average duration of the illness was 4 months.

Characteristically the onset is insidious and not preceded by dietetic disturbance or ill-health. There are three basic symptoms : a profound change in temperament, muscular hypotonia, and tachycardia. Other features of the disease, such as a skin rash, perspiration and affections of the eyes and mouth, vary considerably in their onset, intensity, and duration. Conjunctival irritation with photophobia but without inflammatory evidences is an inconstant symptom ; it may be absent, barely perceptible, or a leading feature of the disease. In 2 out of the 65 cases studied it was the most troublesome symptom, persisting some weeks after other symptoms had subsided, but causing no permanent ocular damage. Buccal irritation is also common and these infants are very susceptible to secondary infections.

Treatment has been symptomatic since the cause of the disease is unknown ; neither social nor financial status has any ætiological significance, nor is there any evidence that the disease is due to vitamin deficiency. The guiding principles in management are scrupulous attention to bodily hygiene, great patience in feeding, and the use of sedatives and local soothing applications.

Stewart Duke-Elder.

483. **An Uncommon Case of Sturge-Weber's Disease.** (Sturge-Weber's Sykdom.)

K. RORVIK. *Nordisk Medicin*, 34, 1104-1107. May 9, 1947. 3 figs. 9 refs.

The author reports a case (female, 28 years of age) with nævus flammeus localized to the right upper part of the face, who suffered from attacks of migraine with subsequent hemiparesis and had a deep central excavation of the optic disk (6-8 dioptries) of the right eye. The vision was impaired (5/15) and the visual field presented a nasal defect, but curiously enough the tension was normal. X-ray of the skull showed calcifications localized in the right part of the brain especially in the parietal and occipital gyri. *E. Godtfredsen.*

XXXVIII. INDUSTRIAL & OCCUPATIONAL OPHTHALMOLOGY, ILLUMINATION, ETC.

484. **Experiences in the Practice of Ophthalmology in the Army.**

F. H. THEODORE. New York Soc. for Clin. Ophthal. Reported in *Amer. J. Ophthal.*, 30, 74-75. Jan., 1947.

Of 10,532 men who had defective vision in one or both eyes 2,509 were classified as unexplained amblyopia. Under field conditions night blindness and vernal catarrh assume much greater importance than in civilian life, whilst primary meningococcal conjunctivitis (9 cases) and exudative choroiditis in young men, were seen more commonly in soldiers. *A. G. Leigh.*

485. **Visual Problems in Aviation.**

E. A. PINSON. New York Soc. for Clin. Ophthal. Reported in *Amer. J. Ophthal.*, 30, 73-74. Jan., 1947.

The author mentions certain equipment used in the testing of night vision and describes some of the devices used by flying personnel in training and whilst on operations. *A. G. Leigh.*

486. **Injuries and Diseases of the Eye in Industry.** (In Hungarian.) I. BARTOK. *Monograph*. Edited by Novak and Co., Budapest (1947).

The author describes in the first part of his monograph the most frequent injuries to the eye in industry. In a large iron and engine factory during a period of ten years, he found that 12% of all injured workers suffered eye injuries and 7.7% were unfit for work for a period longer than three days owing to the accident. Half the injuries involved the cornea. The Hungarian indemnity law recognizes diseases for compensation; these the author discusses, paying particular attention to the symptoms of lead intoxication and his observations on ophthalmia photo-electrica. A separate chapter discusses the protection of the eyes in industry.

In the second part he discusses the question of compensation for eye accidents. He recommends, instead of the Maschke's table, the assessment of damage in a new form, depending on the percentage loss of visual acuity. He discusses the methods of compensation for eye accidents adopted in various countries and refers to

court decisions in legal cases in Hungary. Finally, he mentions the most important medical problems which may arise in the course of actions for compensation in connection with eye accidents, such as the relation between the accident and malignant tumours, retinal detachment, acute inflammatory glaucoma, interstitial keratitis, etc.

P. Weinstein.

487. Size versus Colour in Air-Sea Rescue.

W. R. G. ATKINS. *Nature*, 159, 612-613. 1947.

It is suggested that in making dinghies visible for long distances at sea the limit has been reached in the use of appropriate colours. The actual limiting factor now is the size of the object. This could be artificially increased by spreading a film of oil around the dinghy.

British Abstracts.

488. Colour Vision in the Textile Industry.

W. D. SCHWEISHERMER. *Textile Colorist and Converter*, 69, 41 and 47. 1947.

A short summary account of the occurrence of normal and abnormal colour vision in textile workers of both sexes.

British Abstracts.

XXXIX. COMPARATIVE OPHTHALMOLOGY

489. Nature of Functional Recovery following Regeneration of Oculomotor Nerve in Amphibians.

R. W. SPERRY. *Anat. Rec.*, 97, 293-315. 1947.

The oculomotor nerve was divided intracranially in tadpoles and salamanders in mid- and late-larval stages. Regeneration resulted in persistent mass action of the re-inervated extrinsic ocular muscles. The majority of fibres mis-regenerated into the wrong muscles and failed to adapt their central reflex relations to their new peripheral terminations. Systematic restoration of adaptive function appeared faintly, however, in correctly directed eye movements around its anteroposterior axis. When the oculomotor nerve was divided within the orbit in tadpoles, so as to allow re-connection of the fibres with their original muscles excellent motor co-ordination resulted. When, in tadpoles, the central end of the divided trochlear nerve was crossed to the peripheral end of the divided oculomotor nerve, wheel movements of the eye in the reverse direction to normal resulted. In amphibian larvæ, therefore, oculomotor nerve fibres can establish functional connections with foreign muscles without adaptive readjustment in their central reflex relations. Regeneration in very early stages in tadpoles after intracranial division of the oculomotor nerve was followed by complete restoration of normal motor function. It is necessary to assume the existence of myotopic specificity among the fibres of the oculomotor nerve to account for complete recovery of normal muscle co-ordination in very young larvæ, and partial re-adaptation in old larvæ. Further relative points are discussed.

British Abstracts.

490. *Structure of the Lacrimal Gland after Pilocarpine Injection.*
Structure de la glande lacrymale du lapin

C. BONHOMME and J. FERRIE. *Ophthalmologica*, 113, 316-319. May, 1947.

The authors describe under the name of apical ergastoplasm a formation in the cells of the lacrimal gland which appears after the injection of pilocarpine. It disappears as tears are produced.

A. J. B. Goldsmith.

491. *Relation of Riboflavin to Equine Periodic Ophthalmia.*

Editorial, J. Amer. Vet. Med. Assoc., 109, 456-457. 1946.

This editorial article discusses the significance of a recent report (*Amer. J. Vet. Res.*, 1946, 7, 430-416) that riboflavin prevented the appearance of new cases of periodic ophthalmia in horses although it was of no value in alleviating acute attacks of the disease. The experimental results are considered not sufficiently definite to justify the view that periodic ophthalmia is caused by riboflavin deficiency because (1) the disease could not be produced with regularity in horses on a deficient diet; (2) because the administration of riboflavin had no therapeutic effect, and (3) no known nutritional disease shows periodic attacks like those seen in ophthalmia.

British Abstracts

XL. MISCELLANEOUS

492. *Bill to Provide for the Registration of Medical Auxiliaries.*
 To be introduced by the Minister of Health. *The South African Optometrist*, 14, 13-17. Jan.-March, 1947.

All opticians are to be registered as "Medical Auxiliaries." They will be subject to the authority of the Medical Council, who may hold examinations and prescribe certificates of competency. Persons not registered by the Medical Council will not be allowed to practice as opticians. To conduct affairs pertaining to opticians, a committee will be established, consisting of seven members (three opticians, three appointed by the Medical Council, and one appointed by the Minister). The committee ranges under the Medical Council to whom is given the right to prescribe the conditions under which members may carry out their profession. [This bill has been violently attacked by the local opticians. Their feelings are expressed in an editorial in the same number, p. 3.]

A. Jokl.

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Ophthalmic Literature

FOR 1947

VOLUME 1

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Owing to the (temporary) shortage of paper the Review articles are, for the present, being discontinued.

Abstracts

II. HISTORY: EDUCATION

493. Aims and Aids in the Teaching of Basic Sciences in Ophthalmology.

D. G. COGAN. *Arch. Ophthalm.*, 37, 428-432. April, 1947. 11 refs.

Ophthalmology requires of its more polished exponents a basic knowledge of more scientific subjects than, perhaps, does any other specialty. Cogan considers that a basic science course should aim primarily at laying a foundation for the appreciation of its clinical side and suggests the following subjects, indicating the percentage of time to be devoted to each: Anatomy, 23; Optics, 23; Physiology and Biochemistry, 19; Neuro-anatomy and Physiology, 18; Bacteriology, 8; Pharmacology, 4; Instruments, 4; Miscellaneous (Heredity, etc.), 1. He considers that teaching in these subjects should not be "farmed out" to members of the basic science departments, but should be done by ophthalmologists with special interest, aptitude and training.

In a second section he gives a list of some demonstrations and experiments which he has found useful in the students' laboratory sessions. This does not lend itself to abstraction, but the whole article is interesting and stimulating, and should be read by all those in whose hands is the responsibility for the teaching and training of ophthalmologists of the future. *A. J. B. Goldsmith.*

494. Teaching of Basic Sciences in Ophthalmology.

Correspondence by A. C. WOODS, C. S. O'BRIEN, F. H. VERHOEFF, P. THYGESON, L. T. POST, F. H. ADLER and LcG. H. HARDY. *Arch. Ophthalm.*, 37, 536-545. April, 1947.

The authors of these letters had the opportunity of reading the proofs of Cogan's paper on this subject (vide Abs. 493) and the correspondence contains their criticisms and comments. On the whole there is general approval of Cogan's views. Woods points out that the emphasis of the programme would vary with the individual interests and talents of the teaching staff. He thinks that the course would be best taken during the time of the trainee's "internship", not before it, as advocated by Cogan, a view with which O'Brien concurs. [Cf. recent alterations in the regulations for the Primary F.R.C.S. England.] Thygeson calls attention to the difficulty of any school in mustering instructors in the basic sciences from among their busy clinical staff and calls for a happy balance between didactic and laboratory instruction. Post thinks that a student who has gone through such a course will have difficulty in

finding a resident appointment in which he will receive good systematic clinical instruction, and Adler on the basis of past disappointment fears that the mental capacities and interests of most students will divert their energies to more obviously useful clinical work. Hardy emphasizes the staffing difficulty; he found in the Columbia University that co-operation with an already existing Basic Science Faculty was not fruitful as the problems of ophthalmology are so specialized. He thinks it would be difficult to collect 3 or 4 full-time men with sufficient enthusiasm and interest to do all the teaching, and considers that instruction is probably best distributed among all the clinical staff, and the full-time non-clinical staff of the hospital. His estimate of the time which a basic science course should take is 800 hours in a full-time four months session.

A. J. B. Goldsmith.

495. The Eye and Water in Antiquity. (Auge und Wasser in der Antike.) A. A. M. ESSER. *Klin. Monatsbl. f. Augenh.*, **111**, 184-192. Jan., 1947. 36 refs.

Some interesting historical remarks about the use of water in the treatment of eye diseases among the classical Greeks and Romans, derived from the writings of Hippocrates, Celsus, Pliny, Galen and others.

Loewenstein.

III. HUMAN ANATOMY

496. Intramural Vessels in the Retina (Vasa Vasorum). A. LOEWENSTEIN.
Vide abs. 686.

V. HEREDITY

497. Hereditary Anomalies of the Eye.

W. J. B. RIDDELL. N.Y. Acad. Med., Section of Ophthalmology. Reported in *Arch. Ophthal.*, **37**, 697. May, 1947.

Colour blindness and myopia are of hereditary origin, but infections of the globe are the result of environmental influences. Twenty-four pairs of chromosomes exist in man and the genes are present in these like beads on a string. Conditions having no pathological connection like hæmophilia and colour blindness may be inherited through genes carried in the same chromosome or on opposite members of the same pair of chromosomes. It is now possible to envisage the creation of human chromosome maps, and this is a field open to any trained clinician.

A. G. Cross.

498. Familial Cataract with Extensive Pedigree Chart. I. L. JOHNSTONE
Vide abs. 705.

VI. VEGETATIVE PHYSIOLOGY AND BIOCHEMISTRY

Metabolism.

499. Experimental Studies on the Blood-Aqueous Barrier II.

Electrophotometric measurements of fluorescein content of aqueous after intravenous injection of fluorescein, the eye being under the influence of Physostigmine, Pilocarpine, Neostigmine or Atropine.

F. W. STOCKER. *Arch. Ophthal.*, **37**, 583-590. May, 1947.

It is generally recognized that an increased permeability of the intra-ocular capillaries is reflected in an increased rate of penetration

of fluorescein from the blood into the aqueous humour; the author has applied a photo-electric method of measuring the fluorescein concentration in the aqueous humour to the study of the changes in the rate of appearance of the dyestuff resulting from the instillation of certain drugs into the eye. The miotics pilocarpine, physostigmine, and neostigmine all markedly increased the rate of appearance of the dyestuff in the anterior chamber, whereas atropine had a negligible effect. Rutin, a glucoside closely related chemically and pharmacologically to vitamin P, might be expected to reduce capillary permeability; in the normal eye, however, no change in rate of appearance caused by eserine was induced by preliminary feeding of rutin. The author, however, points to the inadequacy of his results on rutin, in so far as the number of experimental animals was concerned, and he emphasizes the preliminary nature of the report.

H. Dawson.

500. On the Occurrence in the Retina of Conditions Corresponding to the "Blood-Brain-Barrier".

E. PALM. *Acta Ophthal.* (Copenhagen), 25, 29-35. July, 1947. 17 refs.

The acid dye, trypan blue, was injected intravenously in rabbits, 3-5 times at intervals for a period of from 1 to 4 days. A newly prepared saturated solution was used in doses starting at 3-11 ml. solution per kg. body weight and finishing with 20-52 ml.; 10 minutes after the rabbits had been killed the vascular system of the head was flushed clean with physiological sodium chloride and the eyes were fixed in formalin (40%). The retinae proved in all cases (7 rabbits) to be completely unstained. If the dye was introduced directly into the eye, either after removal of the vitreous body or into the anterior chamber after it had been evacuated, the retina was stained a faint but distinctly blue colour. Histological examination showed that the stain was localized in a broad and distinct layer in the nuclear layers of the retina.

The experiments show that the retina, like the brain, has a "blood-brain-barrier" localized in the endothelium of the vessels; in this respect the retina and the brain behave alike.

E. Godtfredsen.

501. Hydration Properties of Excised Cornea and Factors Responsible for Transparency.

W. M. HART. College of Physicians of Philadelphia, Section of Ophthal. Reported in *Arch. Ophthal.*, 37, 692-693. May, 1947.

It has been shown that the degree of hydration is the chief determining factor in transparency of the cornea, and that it is responsible for the optical difference between cornea and sclera. The cornea possesses a dehydrating mechanism to keep down its water content, and this prevents opacification. This property is not possessed by

the sclera, though it will become transparent if dried in air or dehydrated in glycerine. Other factors responsible for the transparency of the cornea are temperature, presence of electrolytes, the iso-electric point, dissociation and association, mechanical stresses, hysteresis, and coacervate formation. The refractive index of the water in the cornea may be affected by pH, electrolytes, non-electrolytes, surface tension and temperature. It is postulated that when the refractive index of the solvent water in the cornea becomes different from that of the corneal particles, opacity results. The discussion which followed this paper made the points that the deleterious effects of cocaine solution upon the cornea are due to their being hypertonic, and that during operations for detachment of the retina, flushing of the cornea with 1.5% saline solution prevents turbidity. It was also suggested that these points should be considered during work on transplantation of the cornea.

A. G. Cross.

502. Respiration and Glycolysis of the Retina after Division of the Optic Nerve. (La respirazione e la glicolisi della retina dopo la recisione del nervo ottico.)

R. CAMPOS. *Rass. Ital. d'Ottal.*, 16, 169-174. May-June, 1947. 2 figs. 17 refs.

The optic nerve of the rabbit was cut intra-orbitally so that the central and the ciliary vessels were spared; the respiration of the retina was then measured by Warburg's method, following the direct ($Q_{O_2}^d$) and the indirect ($Q_{O_2}^i$) methods; in the same way the glycolysis under aerobic ($Q_m^{O_2}$) and anaerobic ($Q_m^{N_2}$) conditions was also determined at variable times after resection of the nerve. Tests made at intervals of 5, 45, 71, 95, 158 days from the operation showed that the metabolism of the retina retains its characteristics (active respiration as measured by the indirect method together with marked anaerobic and aerobic glycolysis) even five months after the optic nerve has been cut, that is, at a time when the optic fibres and the ganglion cells are completely degenerated as shown by histological control.

N. Pagliarani.

Vascular Circulation

503. An Investigation of the Function of the Arterioles, Capillaries and Veins of the Anterior Segment of the Eye. (Exploracion funcional de las arteriolas, capilares y venas del segmento anterior de ojo.)

B. J. TISCORNIA. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 367-374. April, 1947.

The author divides the circulatory system of the eye into arterioles of distribution, the capillary system with metabolic and dialysing

functions, the venous capillaries or evacuating system (of re-absorption), and the efferent veins. He has found in angio-sclerosis that when arterio-sclerotic changes predominate, the ocular tension is lowered, and when the disturbance is primarily in the venous system, tension is raised.

The activity of the arterioles is governed by the vegetative nervous system. On stimulation with ephedrine, when the capillary system is active, there is no increase in pressure, when it is inactive the capillary pressure is increased and the intra-ocular pressure tends to rise owing to outward dialysis from blood into the chambers of the eye. If the paths of elimination are normal they will counteract this increase, if they are not, the ocular tension may rise or (if they are dilated) fall.

The author instilled 5 drops of 5% ephedrine sulphate at intervals of one minute, the pupillary diameter and ocular tension having been previously recorded. Twenty to thirty minutes later the pupil was again measured and the tension taken. In normal conditions and in cases with marked arteriosclerosis ephedrine had no effect on the tension, in cases with a diminution of the neuro-arteriolar tone with less blood-flow, a fall in tension occurred, with disturbances of the exit veins, a rise followed. This last phenomenon was noted in 11.5% of angio-sclerotic patients and in 33.87% of glaucomatous patients. He used 2% ephedrine sulphate with 0.16% calcium chlorate as drops 3 times daily in cases of neuro-circulatory asthenia with great success.

The Neuro capillary Test of Vidal and Malbran. The chlorate of carbanide choline instilled into the eye in a form which can be absorbed through the cornea (0.033% solution) causes a rise in ocular tension for 3.5 minutes when the circulation is normal, followed by a fall lasting some 50 minutes. The tension returns to normal during the next 30 minutes. The initial rise is due to increased pressure in the capillary system, the subsequent fall to the action of the distributory veins. When there is some disturbance in the venous system this fall does not occur.

to normal owing to the action of the venous capillaries.

In advanced primary chronic glaucoma this response is diminished and the author deduces that there is an increase of choline-esterase in the tissues which produces an upset of the capillary system and ocular oedema.

E. E. Cass

504 On the Sympathetic Innervation and Neuro-vegetative Control of the Uvea. (Sull'innervazione simpatica e sulla regolazione neuro-vegetativa dell'uvea.)

P. MATTEUCCI *Rass Ital d'Ottal*, 16, 186-198 May-June, 1947
9 figs

An experimental study of histological alterations in the anterior segment of the uveal tract of rabbits, after surgical removal either of the superior cervical ganglion or of the carotid sympathetic plexus, or

of both; no vascular changes were found, but only a slight formation of vacuoles in the cells of the pars iridica and ciliaris retinae. The author considers that alteration of the ocular tension after re-section of the sympathetic is not due to vascular changes but to a transitory derangement of the secretion of the aqueous humour. A second group of experiments was performed on the eyes of rabbits to study the effect of paracentesis of the anterior chamber after sympathetic denervation. In comparison with the eyes of controls submitted only to paracentesis, the de-nervated eyes showed a greater dilatation of the uveal vessels and a less formation of vacuoles in the cells. On the basis of these last experiments the author argues in favour of the hypothesis that the more severe vascular alterations occurring in denervated eyes after any intervention are due to modifications of the trophic and controlling action of the sympathetic on cellular metabolism.

N. Pagliarani.

Intra-ocular Pressure.

505. The Influence of Local Arterial Blood Pressure on Aqueous Humour and Intra-ocular Pressure. An Experimental Study of the Mechanisms Maintaining Intra-ocular Pressure.

E. BÁRÁNY. *Acta Ophthal.* (Copenhagen), 25, 81-94. July, 1947. 6 figs. 2 refs.

The present paper is part II of an exhaustive study on rabbits with the sub-title: "the recovery of intra-ocular pressure, arterial blood pressure and heat dissipation in the external ear after unilateral carotid ligation." In his first paper (*Acta Ophthal.*, 24, 337-387. 1946) a description of the experimental methods are given in detail. Unilateral closure of the carotid artery was obtained by ligation. The intra-ocular tension was measured with a special calibrated tonometer (model Schiøtz). The blood pressure was measured by compression of the artery of the external ear which corresponds to the ophthalmic artery, both being branches of the external carotid artery. Heat dissipation was determined by immersing the two ears in two separate calorimeters. The animals were repeatedly examined 10 days before and 40 days after unilateral carotid ligation. After the carotid had been ligated a fall was observed both in the intra-ocular tension (3.5 mm.) and the blood pressure (from 60 to 30 mm.). During the next 1 to 3 weeks the intra-ocular tension slowly became normal although the blood pressure showed a significant deficit and remained far below the normal. This points towards a special defence-mechanism of the intra-ocular tension against a fall in blood pressure. Experiment showed that the heat dissipation became normal almost simultaneously with the intra-ocular tension. [The fact that two different circulatory areas (eye and ear) present identical courses of reaction

to carotid ligation supports the view of a general adaptation of the vascular bed to low blood pressure, but the special ocular defence-mechanism seems more questionable.]

E. Godtfredsen.

506. Appreciation and Mechanism of the Destructive Effects of Ocular Hypertension. (Appréciation et mécanisme des effets destructeurs exercés par l'hypertension oculaire.)

A. NATALE. *Arch. d'Ophtal.*, 7, 129-147. 1947. 81 refs.

This excellent and comprehensive summary of modern biochemical and clinical approaches to the study of raised ocular tension, is accompanied by a list of some seventy papers which have been consulted in its compilation.

L. E. Werner.

507. The Influence of Coffee upon the Normal Ocular Tension. (Influencia del café sobre la tensión ocular normal.)

CYRO DE REZENDE. *Arch. de Ofal. de Bs. As.*, 23, 45-66. Jan.-March, 1947. 110 graphs. 30 refs.

After dealing with the modern knowledge of the chemical composition, pharmaco-dynamic action and effects which coffee exercises on the organism, the author reviews previous work dealing with the effect of coffee on the ocular tension. He then details his own experimental results on the effect on the normal ocular tension of a coffee-infusion of a concentration of 100 g. powder in 150 g. water. The results obtained in 100 subjects were as follows: increase in 43.5%, decrease in 27% and no change in 29%.

Moacyr Alvaro.

508. Lowering of Intra-ocular Tension following Muscular Fatigue. (De l'abaissement A. R. après la fatigue musculaire.)
du Sud-Est, meeting March 22, 1946. Reported
4-118. Feb., 1947.

A case is described of a young man, an international athlete, who had suffered from recurrent attacks of acute glaucoma. The attacks were acute, but only lasted three to four hours. During the four years in which the patient was under observation, he

physical exercise.

VII. PHARMACOLOGY AND TOXICOLOGY.

509. Observations on the Retinal Circulation during Convulsive Attacks produced by Tetrazol Pentamethylenc. (Recherches sur la circulation rétinienne au cours des crises convulsives déterminées par le pentaméthylène tétrazol).

LAMARCHE and COHEN-BOULAKIA. *Rev. d'Oto-Neuro-Ophtal.*, 19, 85-90. Feb., 1947.

The authors describe the appearance of the fundus oculi during the convulsive attacks. At the onset of the clonic phase, the disc

appears completely white and the arteries are not recognisable. Then, as the attack passes off, the arterial circulation fills up, and there is an extremely marked pulsation of the retinal veins. The condition then returns to normal, apart from a slight degree of congestion in the immediate neighbourhood of the optic disc.

As a rule, the spasm of the retinal arteries arises at the height of the convulsive attack, and persists until the end of the convulsive movements. In one case, however, retinal spasm occurred before the crisis, and the authors think that this, almost certainly, occurs more often than they have observed. Observation between the time of injection and the onset of the clonic phase is rendered almost impossible by the movement of the globes and lids.

In two cases, however, the fundi showed no change.

G. I. Scott.

510. **Blindness after Barbiturate Poisoning.** (Amaurose après intoxication aiguë aux barbituriques).

A. FRANCESCHETTI and M. DORET. Soc. d'Oto-Neuro-Ophthal. de Genève, meeting Nov. 15, 1945. Reported in *Rev. d'Oto-Neuro-Ophthal.*, 19, 91-92. Feb., 1947.

Franceschetti and Doret report the case of a young woman who took nineteen "Gardenal" tablets and was found, on regaining consciousness, to be almost completely blind. When first examined vision was reduced to perception of light. Treatment with vitamins B and C, and injections of acetylcholine produced a slow and gradual recovery of vision.

The authors stress the rarity of blindness following barbiturate poisoning, although they point out that various other ocular disturbances, such as ocular palsies, may occur.

They point out that, in the case under discussion, it is a matter of opinion whether the condition was a true cerebral poisoning or was psychogenic in nature.

G. I. Scott.

511. **An Account of Certain Ocular Disturbances which may occur in Smokers of "Ersatz" Tobaccos.** J. SEDAN.

Vide abs. 866.

VIII. OPTICS

Physiological

512. **The Reflection Factor of Glass.**

J. G. HOLMES. *Trans. Illum. Engineering Soc.*, 12, 108-114. 1947. 4 tables. 4 refs.

Formulae for the reflection factor at single and double air-glass surfaces are applied to plain, prismatic and coloured glass. The author defines the effects of a prismatic surface, concluding that the transmittance of a coloured glass is dependent on its reflection factor as well as its absorption factor, and for a given absorption the transmittance of a prismatic glass is slightly greater than that of plain.

B.O.A.

513. **Bench for the Teaching of Ophthalmic Optics.**

E. LUDVIGH. *Arch. Ophthal.*, 37, 383-385. March, 1947. 2 figs.

An optical bench is described which aims at eliminating undesirable features in older patterns. It is 2 metres long and the lens-carriers are so arranged and machined that all the lenses are at the same height thereby avoiding vertical displacement by

students. Rotation of the lenses is also eliminated for the same reason and the usual locking feature of the lens is not supplied. Allowance is made for fitting several lenses close together by having several cells in the lens-carrier as well as additional stops and checks. The effect of these modifications is to produce an optical bench which is cheaper and more rugged than optical benches intended for general use.

B. W. Rycroft.

514. On the Refractive Index of the Retina.

A. AJO, *Acta Physiol. Scand.*, 13, 130-149. 1947.

The Abbé refractometer was adapted to measuring the refractive index of the retinal layers of eyes from a number of animals. Values vary from 1.357 for pigs' eyes to 1.362 for newly-born calves'. In experiments with cows' eyes the index was greater in the light than in the dark-adapted condition. This result is consistent with the view that visual purple loses water when bleached.

British Abstracts.

refs.
electron microscope and
properties of the electron
illuminating system "

outlined.

B.O.A.

Anomalies of Refraction: Accommodation.

516. Aniseikonia. (L'aniseiconie.)

S. B. VALLON and E. HARTMANN. *Ann. d'Ocul.*, 180, 65-75. Feb., 1947. 8 figs. 26 refs.

This summary of the results obtained and the methods employed in various centres, is followed by a useful reference list of papers on the subject.

L. E. Werner.

517. Ocular Headache.

I. S. BAKER. *The Optician*, 113, 191-194, 219-222, 267-270, 287-288. 1947. 9 figs. 10 refs.

The author discusses headache not associated with eye disease which can be cured by refractive and orthoptic treatment. It would appear that almost every type of headache can be cured by these means.

Stewart Duke-Elder.

518. Spasm of Accommodation. Observation.]

G. TECHOW. *Klin. Wochenschr.*, 25, 1-11. 1947.

"Mud-fever" was observed among German soldiers in a trench with no mortality. The condition was characterized by a feverish state, a high temperature, and a rapid pulse. The condition was corrected with minus lenses from 2-4 D and was accompanied by a rapid change in the reactions of the pupils. The author assumes a new kind of toxin which might attack the centre of accommodation and provoke a spasm.

Loewenstein.

of Astigmatism and Hypermetropia in the Astigmatic Eye.

520. Chalazion and Astigmatism. (Chalazion and Astigmatismus.)

K. SAFAR. *Wien. klin. Wchnschr.*, 59, 484. July, 1947.

Chalazion of the upper lid caused an astigmatism of 1.0 D axis 100°, reducing vision to 6/8 and provoking diplopia. It was removed after 6 months; 16 days later the astigmatism—and diplopia—had disappeared and vision was 6/4.

H. L.

521. Novelties in Ophthalmology. K. LINDNER.

Vide abs. 886.

522. A Study of Refraction According to the Technique Used by Some North American Ophthalmologists. (El estudio de la refraccion segun la tecnica empleada por algunos oftalmologos norteamericanos.)

W. H. CRISP. *Bol. del Hosp. Oftal. Ntra. Sra. de la Luz*, 3, 217–236. Jan.–Feb., 1947. 14 figs.

The author states that many ophthalmologists in their enthusiasm for surgery, neglect the universal importance of refraction. Certain details of technique for the measurement of spherical errors of refraction are mentioned, but the greater part of this paper deals with astigmatism and with methods of examination which are generally not mentioned or are insufficiently described in the textbooks. The author advises the fogging method when examining cases of hyperopia. The technique of the use of the crossed cylinder is described in great detail.

Moacyr Alvaro.

523. A Graphic Study of Fatigue of the Accommodation. (Étude graphique de la fatigue accommodative.)

A. DUBOIS-POULSEN and A. ROZAN. *Ann. d'Ocul.*, 180, 206–237. April, 1947. 20 tables. 13 figs. 13 refs.

A long paper giving details of experiments on accommodative fatigue with a home-made apparatus based on that of Howe. The results were inconclusive, the main conclusion drawn being that the ciliary muscles suffer little from fatigue.

R. W. Stephenson.

524. Paralysis of Accommodation as the Presenting Feature in Cases of Botulism.

H. ROGER.

Vide abs. 842.

Spectacles, Contact Lenses, etc.

525. Further Experiences with Contact Lenses. (Weitere Erfahrungen mit Haftgläsern.)

C. H. SÄTLER. *Klin. Monatsbl. f. Augenh.*, 111, 184. Jan., 1947.

The author, who has the greatest experience in the use of contact lenses on the Continent of Europe, uses the Müller-Welt type of lens for the correction of ametropia. He prescribes approximately 800 per year, does not take an impression of the globe, but has a selection of 1,000 lenses and is satisfied only if the patient can wear the selected contact lens for the whole day. The technique of fitting the lenses is described by Adolf Müller-Welt in a special pamphlet (Stuttgart S, Sonnenbergstrasse 23). It is interesting to realise that contact lenses of this type are very suitable for aphakic eyes.

Loewenstein.

IX. PHYSIOLOGY AND PSYCHOLOGY OF VISION

Physico-Chemistry

526. Latest Advances in the Physiology of Vision. (Ultimos adelantos en la fisiologia de la vision.)

H. HARTRIDGE. *Arch. Ofstal. de Bs. As.*, 23, 36-44. Jan.-March, 1947.
2 tables. 8 refs.

This article deals with optometry with X-rays, describing Goldmann and Hagen's method and Sorsby and O'Connor's method. Other advances in the physiology of vision are also discussed. See Abs. No. 237 to 245. *Moacyr Alvaro.*

527. Photochemical Substance of Retinal Cones and the Theory of Colour Vision.

A. POLACK. *Compt. Rend. l'Acad. Sci.*, 224, 158-159. 1947.

The isolation of a specific pigment, iodopsin, from the retinal cones which has a maximum absorption in the yellow and secondary maxima in the red and blue regions of the spectrum, provides evidence for a penta- or oligochromatic theory of colour vision and is not in accord with Young's original trichromatic theory.

British Abstracts.

528. The Diameters and Intercentre Distances of the Foveal Cones.

H. HARTRIDGE. *J. Physiol.*, 106, 28-29 P. July, 1947.

The author questions Polyak's statement that the cones of the central fovea are of the order of 1μ in diameter: two microphotographs in Polyak's book were measured and the average inter-conal distance found was in the region of 4μ . *H. Davson.*

529. Sensitivity of Human Eye to Infra-red Radiation.

D. R. GRIFFIN, R. HUBBARD and G. WALD. *J. Opt. Soc. Amer.*, 37, 546-554. 1947.

Under certain conditions the periphery of the retina becomes increasingly more sensitive than the fovea to wavelengths longer than 800 and the radiation appears colourless at the threshold. With short exposures ($1/25$ sec.) and small fields the fovea may remain more sensitive than the periphery well into the infra-red, but when the exposure is lengthened (1 sec.) the sensitivity of the periphery increases relative to that of the fovea. A special adapter employing filters was used. *British Abstracts.*

530. The Thermal Radiation Inside the Eye and the Red End of the Spectral Sensitivity Curve.

M. H. PIRENNE. *J. Physiol.*, 106, 25-26 P. July, 1947.

The infra-red flux striking the retina is adequate to stimulate vision on a purely energetic basis; that it does not do so means that the eye is not sensitive to these long radiations. *H. Davson.*

531. Visual Sensations Aroused by Magnetic Fields.

H. B. BARLOW, H. I. KOHN and E. G. WALSH. *Amer. J. Physiol.*, 148, 372-375. 1947.

This paper describes a series of experiments on the visual phenomena (phosphenes) produced by subjecting the eye to electric and

magnetic fields alternating at frequencies up to 90 cycles per second. All the experiments show similarity in the response of both kinds to all of a number of background conditions except that of closing the eyes. This raises the threshold for electric stimulation but has no effect in the magnetic case. In both cases the phosphenes are greatest at the periphery of the field never occurring at the point of fixation. They are colourless, subject to fatigue, abolished by pressure on the eye and prolonged by eye movements. Their duration increases with stimulus intensity. Similarities of this kind suggest that both stimulate the nerve elements and experiments with localized magnetic fields indicate that phosphenes originate in the retina.

British Abstracts.

Neuro-physiology

532. Effect of a Constant Current on Vision.

S. V. KRAVKOV and L. P. GALOCHKINA. *J. Opt. Soc. Amer.*, **37**, 181-186. 1947.

Electrical stimulation was accomplished by placing an active electrode on the temple or eyelids, and an indifferent electrode on the neck or hand. The visual sensitivity of the dark-adapted eye during and after electrical stimulation was explored by the use of an adaptometer (for rod vision) and a monochromator (for cone vision). When the active electrode was made positive, the following changes were noted: The sensitivity of peripheral rod vision was reduced. Foveal cone sensitivity was reduced for monochromatic lights from the region of 570 to 700 $\mu\mu$ in wavelength. Cone sensitivity was increased for lights from 425 to 570 $\mu\mu$. Opposite effects were noted when the active electrode was made negative. In later experiments, KI solution was applied to the front of the eye during the time when the active electrode was positive. This had the effect of accentuating the changes produced by the electrical stimulation alone. CaCl_2 , however, had the effect of reversing the changes produced by the current. It is believed that the balance of Ca and K ions is correlated with antagonistic sympathetic and parasympathetic effects.

L. A. Riggs. Psychol. Abs.

533. Single Fibre Analysis of Inhibition and the Polarity of the Retinal Elements.

B. GERNANDT and R. GRANIT. *J. Neurophysiol.*, **10**, 295-301. July, 1947. 1 fig. 14 refs.

Hartline has shown that isolated optic nerve fibres fall into three categories according to their electrical discharge on stimulation of the retina by light: (a) "On-Elements" discharging only during illumination, (b) "Off-Elements" discharging only on cessation of the illumination, and (c) "On-Off-Elements" responding at the onset and cessation of the light stimulus. The present authors have

measured the light thresholds of the three types of element in the optic nerve of the cat and in particular the "Off/On Threshold Ratio", i.e., the ratio of the thresholds required for eliciting the "off" and "on" discharges in given "on-off-elements". On the same elements, the responses to polarization, induced by passing a direct current across the globe, were measured. Pure "on-elements" responded to cathodal polarization (nasal electrode negative) with an "on" discharge in the sense that they responded on making the circuit; with the electrodes reversed (anodal polarization) an "off" discharge was obtained. "Off-elements" responded in the opposite way. "On-off-elements" were highly variable in their responses to polarization, those elements with a comparatively low threshold for the "off" discharge showed a cathodal "off" response (like pure "off-elements"). It is suggested that the electrical variations in the retina, reflected in the electro-retinogram, are of an electrotonic type analogous in some ways to the polarization potentials induced experimentally; hence the behaviour of the various elements under these experimental conditions should be of significance in interpreting the response of the retina to light. A theory to account for the phenomena described is put forward; essentially the authors postulate a direct and indirect path for the initial response of the receptor to light; impulses passing along the indirect path may inhibit those passing along the direct one and so no response is obtained on illumination of the retina; on cessation of the illumination, the release of the inhibition gives an "off" response. If the number of indirect paths is not very high, the inhibition is ineffective and both "on" and "off" responses are obtained. "On-off-elements" thus represent fibres on to which converge varying combinations of direct and indirect paths; according as one or another type of path predominates, the characteristics will be different.

H. Davson.

534. Inhibition and the Polarity of the Retinal Elements.

B. GERNANDT and R. GRANIT. *Nature*, 159, 806. 1947.

Vide abs. 533.

535. Colour Sensitivity, Contrast and Polarity of the Retinal Elements.

B. GERNANDT. *J. Neurophysiol.*, 10, 302-308. July, 1947. 3 figs. 8 refs.

Spectral sensitivity curves for different types of element in the retina of the cat were obtained during polarization. The "on-elements" were sensitive to short wavelengths only, the "off-elements" to both long and short wavelengths; the "on-off-elements" had humps or depressions in various regions, notably at 5200, 6000, 4700 and 5700 Å. The "on" and "off" components of an "on-off-element" were often differentially sensitive to

"contrasting" regions of the spectrum, suggesting that the two components run in different but adjacent and well-synchronized fibres.

H. Davson.

536. Colour Sensitivity, Contrast and Polarity of the Retinal Elements.

B. GERNANDT. *Nature*, 159, 806-807. 1947.

Vide abs. 535.

537. Peripheral Visual Acuity. With Special Reference to Scotopic Illumination.

J. MANDELBAUM and L. L. SLOAN. *Amer. J. Ophthalm.*, 30, 581-588. May, 1947. 2 figs. 6 refs.

Classical investigations into retinal discrimination have all been carried out at high levels of illumination and have established the immediate and rapid fall in acuity immediately off the fovea. The authors point out that scotopic measurements are, however, of particular importance, since it is under conditions of low illumination that the peripheral regions of the retina take over the discriminatory functions. Photopic acuity paralleled the cone population, and it was desired to see if scotopic acuity corresponded to the rod distribution.

A Clason acuity meter projecting Landoldt rings provided test objects, and illumination was reduced in 1-log units (10% transmission) to as low as 0.00002 milli-lambert. One eye was studied intensively and several measurements were made on 18 observers. Retinal acuity was plotted against the angle of fixation for various levels of illumination. Since the highest illumination used came within the photopic range, this curve followed previously recorded ones and, as was to be expected, foveal acuity fell progressively with decreasing illumination. Scotopic acuity was, of course, of a very low order but did not parallel the rod population, the maximum acuity being obtained with a fixation angle of 4 to 8 degrees, except at the very lowest levels, when acuity was fairly constant, from 4 to 30 degrees. There was a considerable overlap between rod and cone function, rod acuity dominating to well above the cone threshold.

J. D. Spooner.

538. The Normal Visual (Rod) Field of the Dark-adapted Eye.

I. MANN and F. W. SHARPLEY. *J. Physiol.*, 106, 301-304. July, 1947. 1 fig. 4 refs. 1 table.

The "angular radii" of the scotopic visual fields of 87 subjects are presented; a definite decrease in field with the age of the individual is observed.

H. Davson.

539. The Relation of the Configuration of a Brightness Contrast Border to its Visibility.

G. A. FRY. *J. Opt. Soc. Amer.*, 37, 166-175. 1947.

Contrast thresholds have been determined for rectangular test objects within a surrounding visual field. The threshold is affected by the length of the rectangle, but is not affected by its width or area, within the range of these experiments. Regular polygons have also been used as test objects, with the result that visibility is not influenced by increasing the number of sides until the polygon approaches a disc. Wavy or saw-toothed borders yield contrast thresholds which reach minimal values as the segmented border is made to approach a straight line. In all of these cases, the visual appearance of the border at threshold is that of a continuous, non-segmented line.

L. A. Riggs. *Psychol. Abs.*

540. Brightness Changes of Positive After-images. (Ueber den Helligkeitsverlauf positiver Nachbilder.)

M. PANNEVIS. *Ophthalmologica*, 113, 280-289. May, 1947. 6 figs.

The primary after-image, obtained immediately after gazing at a bright light for 1 sec., may be changed over (Nachbildumschlag) to what appears to be a negative after-image by gazing at a screen brighter than the primary after-image. At any time the brightness of the screen required for this change-over is thought to be equal to the brightness of the after-image and thus the variation of the latter with time may be measured. Curves describing the process are presented and the significance of their exponential nature is discussed. The author emphasizes the distinction between the change-over described here and the reversal of the after-image (Nachbildumkehr) occurring spontaneously when the brightness of the screen is maintained constant.

H. Davson.

541. Critical Flicker Frequency and the Reversals of Apparent Movement in Lissajous Figures.

V. R. FISICHELLI and H. MISIAK. *Amer. J. Psychol.*, 60, 109-112. 1947.

Product-moment correlations were computed for the combinations of the monocular and binocular flicker frequency and the Lissajous reversals of apparent movement according to axis of rotations. Twenty-two subjects were used following a day of practice trials. A slight positive correlation exists between the binocular critical flicker frequency and the number of reversals of apparent movement. There is no significant difference in the binocular critical flicker frequencies of those who perceived other-than-rotary movement and those who did not.

S. C. Ericksen, *Psychol. Abs.*

542. Visual Adaptation in Relation to Brief Conditioning Stimuli.
B. H. CRAWFORD. *Proc. Roy. Soc. B.*, **134**, 283-302. 1947.

The conditioning stimulus was applied for 1/2 sec. and the test field exposed from time to time. The liminal test stimulus begins to rise about 1/10 sec. before exposure of the eye to the conditioning stimulus. It is suggested that either the stronger conditioning stimulus overtakes the test stimulus on its way to the brain, or that the receptive process in the brain takes longer in the case of the weaker stimulus. The results of experiments to determine the state of adaptation at times *after* removal of the short conditioning stimuli under a wide variety of conditions are given. Among the conditions chosen were a number of practical importance. *British Abstracts.*

543. On the Influence of Vitamins on the Dark Adaptation of Man.
 (Ueber die Beeinflussung der menschlichen Dunkeladaptation durch Vitamine.)

J. VON STUDNITZ. *Klin. Monatsbl. f. Augenh.*, **111**, 154-173. Jan., 1947. 6 figs.

In experiments with frogs, vitamin A, B₁ (aneurin) and C in all concentrations used produced a contraction of the rods and cones, while B₂ (lactoflavin) only did so in high concentrations.

Five human beings from 20 to 26 years, three males and two females, were used as subjects in dark adaptation experiments in which the Nagel adaptometer was used. They were light-adapted before the experiment started. Using vitamin A in the shape of an emulsion of Voganoil (40,000, 100,000 and 250,000 units per person a day) the capacity of dark adaptation was increased in each case, the increase being proportional to the dosage. After the cessation of the administration of the vitamins normal dark adaptation curves appeared in about two to three weeks time. Guinea pigs fed with vitamin A stored more vitamin in the liver and retina than controls. Aneurin in dosages of three times the normal daily intake for two weeks, did not influence dark adaptation. No significant improvement was found following the administration of lactoflavin. 150 mg. ascorbic acid improved dark adaptation more quickly than vitamin A but less markedly. The author assumes that an increased absorption of vitamin A allows an increased formation visual purple. It is essential that vitamin A be given in the form of an emulsion since 250,000 units per person a day of the non-emulsified vitamin did not influence dark adaptation. *Loewenstein.*

544. The Dark Adaptation of the Colour Anomalous Determined with Lights of Different Hues.

A. CHAPANIS. *J. Gen. Physiol.* **30**, 423-437. 1947.

Minimum light thresholds as a function of time spent in the dark were determined for four colour normals, three deuteranopic (or

deuteranomalous) and four protanopic (or protanomalous) subjects, using red, reddish-orange, yellow, green, violet and white light. Dark adaptation curves for deuteranopes and deuteranomalous subjects are essentially identical with those of the colour normal for all colours. The cone portions of the protanopic dark adaptation curves determined with red, reddish-orange, yellow and white light are higher than those for the colour normal and the difference between the two sets of results decreases from long to short wave-lengths. Dark adaptation curves for protanopes and the protanomalous determined with green and violet light are essentially normal in appearance. The results are explained in terms of the known sensitivity characteristics of normal and colour anomalous eyes.

British Abstracts.

54 H.
of dark adaptation the threshold rises to reach a constant value at about the same time that the light threshold reaches a low constant value.

British Abstracts.

54 J. Adaptation.)
Jan., 1947. 1 ref.
dark adaptation of the two eyes.
It by occlusion while the other is
us'
so on, it is useful
the advantages of
tion.]

Loewenstein.

547. Colour Vision Testing in School Children.

J. SCULLY. *Med. Offr.* 77, 207-208. May 24, 1947. 5 refs.

This article gives the standard classification of colour blindness and tabulates colour vision tests as confusion chart, lantern, wool and other colour matching tests, and those involving special apparatus such as spectrometers and spectral colour matching devices. Pre-vocational colour vision testing in schools is recommended as many adult occupations, the Navy, Army, Air Force, Post Office, Police, Merchant Navy, Railways, and Customs and Excise require good colour vision. The author recommends for school children the Collins-Drever test for groups, and the Ishihara plates for individuals. His figures for bad failures in the tests are: boys, 4.9% of 2,050, and girls, 0.4% of 1,142.

A. J. B. Goldsmith

548. Notes on W. S. Stiles' Paper entitled, "A Modified Helmholtz Line-element in Brightness-colour Space."

L. SILBERSTEIN. *J. Opt. Soc. Amer.*, 37, 292-295. 1947.

Objections are raised to the use by Stiles of a modification of Helmholtz' line-element defining a Euclidean colour-space.

Stewart Duke-Elder.

549. Effect of Training Methods on Colour Vision.

J. R. GALLAGHER, E. J. LUDVIGH, S. F. MARTIN and C. D. GALLAGHER. *Arch. Ophthalm.*, 37, 572-582. May, 1947. 1 fig. 6 tables. 7 refs.

Forty-nine of 701 boys at a preparatory school (6.9 per cent.) were found to have defective colour vision when tested on the American Optical Company's Pseudo-isochromatic Plates and were selected for "training". The nature and severity of the colour defects is not stated. Training consisted in the sorting of coloured beads and slips of paper and careful study of the pseudoisochromatic plates on which the boys were encouraged to pick out dots of greatest contrast, these being traced out with a blunt object. In addition 6 boys were trained on an optical device presenting discs of red and green of varying degrees of saturation against a neutral background. This device was also used for testing in both series of boys.

Of the 49 boys trained on the A.O.C. plates, 45 in time learned to make accurate responses on all plates; however, only 6 of these were equally accurate on the similar Ishihara plates and in none did the scores on the colour desaturation test improve. A retest some months later showed a considerable falling from grace [or failing of memory ?].

Of the 6 boys trained on the desaturation device, 5 improved on the device itself but were no better in interpreting the pseudoisochromatic plates.

It is thought that colour training methods improve responses for the actual test on which training is based, but do not equally improve the capacity to discriminate colours in situations other than that in which the training is given.

A. J. B. Goldsmith.

550. Dependence of Anomaloscope Matching on Viewing Distance or Field Size.

I. R. G. HORNER and E. T. PURSLOW; II, J. H. SHAXBY. *Nature*, 160, 23-24. 1947.

I. An increase in the viewing distance on the anomaloscope nearly always alters the red/green ratio. For most observers the amount of green required in red-green mixtures to match yellow increases with distance. Alteration of field size is not the only cause of this effect.

II. The author confirms the findings of Horner and Purslow but adds that in his anomaloscope the differential scattering of red and green light in the instrument may account for some of the effect.

British Abstracts.

551. Colour Vision and Recent Developments in Colour Vision Testing.

L. H. HARDY, G. RAND and M. C. RITTLER. *Optom. Wkly.*, 38, 187-192. 1947.
A general review.

Stewart Duke-Elder.

552. Transforming Curves.
A. MARRIAGE.
If one of a set of curves is altered, the distribution curve for that stimulus is not changed, though one or both of the other two distribution curves is altered. *British Abstracts*
553. Mixing by the Mixture of Three Stimuli.
W. D. 1947.
A brief summary of the equations at the basis of classical colour mixing. *H. Davson.*
554. The Antichromatic Responses.
H. HARTRIDGE. *J. Physiol.*, 106, 17 P. July, 1947.
The eye suffers from chromatic aberration and yet the defect is not normally noticeable even when the aberration is doubled artificially by lenses; only when the aberration has been quadrupled are the coloured fringes clearly visible. The author links this fact with his observation that when the angle subtended at the eye by isolated yellow and blue objects is sufficiently reduced they lose their colour, and he postulates a blue-yellow suppressor mechanism in the nervous connections of the receptors. *H. Davson.*
555. Silberstein on Intrinsic Properties of the Colour Domain.
R. H. SINDEN. *J. Opt. Soc. Amer.*, 37, 396-398 1947.
A critical review. *Stewart Duke-Elder.*
556. The Specification of Illumination and Colour in Industry. F. BIRREN
Vide abs. 871.
557. Blindness.
F. M. 1947.
"A subject who had been blind on the Ishihara, Pseudo-Isochromatic and Dvorine colour charts was given five weeks training on the Dvorine charts. . . . On completion of training, the subject was able to read all charts without error." It appears that these tests measure a colour-form weakness rather than merely colour weakness. Training probably improves the subject's ability to find and use various discriminatory cues, rather than changing his colour sensitivity. *L. B. Heathers. Psychol. Abs.*
558. Some Important Factors Involved in Vision.
B. C. HERSCH. *Optom. Wkly.*, 38, 779-781. 1947.
Cortical relationships and functions are as significant as peripheral factors in vision. *D. J. Shaad. Psychol. Abs.*
559. The Illusory Perception of Movement caused by Angular Acceleration and by Centrifugal Force during Flight. I. Methodology and Preliminary Results.
A. GRAYBIEL, B. CLARK and K. MACCORQUODALE. *J. Exp. Psychol.*, 37, 170-177. 1947.
"A method was evolved to observe and record the illusory perceptions of motion and displacement during angular acceleration and centrifugal force." *D. W. Taylor. Psychol. Abs.*
560. Changes in Hue, Lightness, and Saturation of Surface Colours in Passing from Daylight to Incandescent-Lamp Light.
H. HELSON and J. GROVE. *J. Opt. Soc. Amer.*, 37, 387-395. 1947.
Colour samples were viewed under illumination by incandescent-lamp light. A match was then secured through the use of the standard colours of the *Munsell Book of Colour* in daylight illumination. The results were in terms of means for hue, value,

and chroma for each sample as matched by seven observers. Three separate backgrounds, white, grey, and black, were employed. It was found that samples containing red and blue seemed redder under incandescent than under daylight illumination; samples ranging from Munsell purple-blue to yellow-red were shifted toward the reddish-yellow. Two invariant hues appeared, one in the yellowish-red, and the other in the purple-blue regions. Shifts of this sort were to be expected on the basis of principles of colour conversion developed by Helson and Judd.

L. A. Riggs. *Psychol. Abs.*

Psychology of Vision

561. The Relationship of Exposure Time and Accuracy in a Perceptual Task.

B. R. PHILIP. *J. Exp. Psychol.*, 37, 178-186. 1947.

Three graduate students served as subjects in two experiments involving the discrimination of colours presented tachistoscopically. The exposure time was varied from 133 to 668 msec. in the first experiment and from 60 to 960 msec. in the second. The results show that, in accordance with Thurstone's theory, there is a sigmoid relationship between exposure time and accuracy. "It is to be noted, however, that the sigmoid form may have relatively narrow limits beyond which there is no great variation of accuracy with speed."

D. W. Taylor. *Psychol. Abs.*

562. Visual Field Factors in the Perception of Direction.

A. D. SALOMON. *Amer. J. Psychol.*, 60, 68-88. 1947.

The perceptual relationship of direction investigated was that between a tilted straight line projected on a vertical screen where it appeared inclined upward to the left, and a small dot placed near an objective extension of the line, at a variable distance from the left end of the line. The experimental conditions are described in some detail. The quantitative results are interpreted. "Aside from the limitations set by retinal acuity, the determinants of precision and constant error in the situations in question are independent of the peripheral factor of eye movements and appear to be central in nature. The experiments provide quantitative data of a sort useful in testing predictions from a field-theory of visual localization of direction. . . ."

S. C. Ericksen, *Psychol. Abs.*

563. The Third Dimension in the Projection of Motion Pictures.

A. PI SUÑER. *Amer. J. Psychol.*, 60, 116-118. 1947.

By experimenting with the alternate method of projecting right and left pictures, distortion is corrected, and the perception of depth results when the projection is viewed simultaneously by both eyes through the openings of an episkotister that is rotating at a speed above the flicker rate. The episkotister through which the projection screen is viewed successively covers and uncovers different parts of the picture. This fragmentation and production of "exclusive" portions of the alternately projected right and left pictures give the perception of depth. This method does away with the necessity of using individual devices such as glasses, etc.

S. C. Ericksen, *Psychol. Abs.*

564 Value and Need as Organizing Factors in Perception.

J. S. BRUNER and C C GOODMAN *J. Abnorm and Soc Psychol*, 42, 33-44. 1947 36 refs

Autochthonous determinants of perception are accurately measured by psychophysics. There is need for equally precise measurement of motivational determinants. The experiments on estimating size were planned to test hypotheses that such determinants are more influential when objects have greater social or individual value. Ten-year-old children adjusted a lighted circle to the perceived size of 5 coins and 5 cardboard discs. With the objects present, discs were judged correctly and coin size was overestimated in proportion to value (except for 50-cent piece). Poor children overestimate coin size more than do rich children, in conformity to the individual value hypothesis. With coins absent, poor children overestimate memory images less than do rich children. Neither Weber's law nor Hollingworth's central tendency fits the results as well as do the motivation hypotheses.

C. M. Harsh, *Psychol Abs*

565 Development of Visual Perception in Man and the Chimpanzee.

A. H. RIESEN. *Science*, 106, 107-108. 1947

Experiments were made on chimpanzees reared in darkness to the age of 16 months and then gradually exposed to light for short periods each day before being brought into normal indoor illumination at the age of 21 months. The slowness with which visual perception developed confirmed the principle that those organisms, e.g. man, that show the greatest intelligence at maturity require the longest period of development.

British Abstracts

566 Visibility of the Deer Fly in Flight

E. LUDVIG. *Science*, 105, 176-177. 1947

After pointing out that visual acuity for a moving object is diminished as the angular velocity of the viewed object increases, the author calculates (on the basis of data derived experimentally from moving objects) that the deer fly might be seen when travelling at a velocity of 105 miles per hour.

F. A. Mote, *Psychol Abs*

567 Sensorial Retinal Relationships in Concomitant Strabismus. H. M. BURIAN

Vide abs 781

X. METHODS OF EXAMINATION.

568 Committee on Standardization of Tonometers. Report on Certification of Tonometers.

Trans Amer Acad Ophthal and Otolary, 52, 553-560. May-June, 1947. 2 tables. 2 refs.

Schiotz tonometers were made by a large number of independent manufacturers prior to the recent war, and many gave widely divergent readings on the same eye. The American Academy of Ophthalmology and Otolaryngology accordingly appointed a

committee for the Standardization of Tonometers. The first act of this committee was to establish tonometer testing stations for the examination of tonometers submitted to them by ophthalmologists and to render advice regarding necessary recalibration. The knowledge gained from the examination of several hundred tonometers has enabled the committee to set up standards for the construction of tonometers, and American manufacturers have agreed to produce instruments according to these specifications. Arrangements have been made to issue a certificate for all tonometers examined and found to be within the approved standard. Clinical tonometry can only be carried out within certain limits of accuracy, owing to the instrument not being held quite vertically, to its being inaccurately centred on the cornea, to variations in the tension of the lids and extra-ocular muscles, etc., and the "clinical reading error" is estimated at approximately ± 2.5 mm. Hg in the region of upper normal intra-ocular pressure.

The instrumental error, at present, may be ± 5 mm. Hg but as, in most cases, inaccuracies tend to cancel each other, it is usually lower, and in the majority of instruments lower than the "clinical reading error". The details of specifications can be found in the paper, but are not reproduced in this abstract. *A. G. Cross.*

569. Perimetric Localization of Fundus Lesions. (Sobre localización perimétrica de las lesiones del fondo del ojo.)

A. V. BARRIERE. *Arq. Brasil. de Oftal.*, 10, 1-15. 1947. 9 figs. 7 refs.

By "ophthalmoscopic localization" the determination of the situation of fundus lesions with relation to fixed points of reference such as the disc in the internal part of the eye and the sclero-corneal limbus or the optic nerve in the external part is implied. The procedures for localization of retinal tears can be divided into 2 groups: (a) those carried out before operation, and (b) those carried out during the operation, this article dealing exclusively with the former. An historical summary of the methods of localization is presented. The author has made several modifications in the technique and these are presented in great detail. *Moacyr Alvaro.*

570. A Method for Measuring Choked Disc. (Eine Methode zur Vermessung der Stauungspapille).

K. HEINZ. *Med. Rundschau*, 1, 4. May, 1947. 3 figs.

Measuring the prominence of choked disc by direct ophthalmoscopy is not sufficiently exact. An arrangement like the Maddox tangent scale enables the examiner to define the refraction exactly from degree to degree in the horizontal and, if required, also in the vertical meridian. In a graph the configuration of the surface of the disc is reproduced and shows not only the difference of refraction between the point of highest and lowest refraction but also the

extent of the fundus with changed refraction, i.e., of the raised part of the fundus. Repeated examinations show the differences of level and the extent of the swelling of the disc. *H. L.*

571. Aspects of the Normal Fundus studied by Sterco-ophthalmoscopy. (Les aspects du fond de l'œil normal étudié par la stéréo-ophthalmoscopie.)

A. BUSACCA. *Arch. d'Ophthal.*, 7, 361-378. 1947. 4 figs.

The author claims that there is as great a difference between ophthalmoscopy with Goldman's slit-lamp and contact lens and with the ophthalmoscope as there is between examination of the cornea by biomicroscopy and by oblique illumination and the loupe. He uses a small funnel attachment which facilitates introduction and orientation of the contact lens.

He comments on the lax use, by many authors, of the terms macula, fovea etc., and defines his own use of them.

He describes in great detail the appearances of the normal fundus, with particular reference to the macula and fovea, and discusses their anatomical interpretation. There are three planes of illumination or of optical discontinuity: 1. That of the internal limiting membrane. 2. That between the retina and choroid. 3. That of the internal surface of the great vessels of the choroid. In certain lightly pigmented subjects a fourth plane, that of the internal surface of the sclera, can be seen. The detailed appearances do not lend themselves to abstraction and the article should be read by those interested. Among many other interesting points, he notes that a change of colour is produced in the macular region after prolonged examination, and considers that this is attributable to the action of the light causing, not a movement of the retinal pigment between the rods and cones, but a displacement of the chromatocytes of the choroid.

His study shows that this method of examination is of great scientific and practical use, enabling the exact level of lesions of the retina and choroid to be determined. *R. W. Stephenson.*

572. A Focusing Flashlight.

spot at
13.00D.

... J. Cross.

573. Student's Model for Slit-lamp Biomicroscopy of the Aqueous Humour.

W. M. GRANT. *Arch. Ophthal.*, 38, 109-110. July, 1947.

A model eye is described which is useful for teaching students the biomicroscopic appearances of the aqueous fluid. A 5 c^m round bottom Pyrex microbeaker is used, into which a rubber stopper is pushed. fluids can be passed, which simulate the used are distilled water, diluted plasma w dilute suspensions of red blood cells in isotonic sodium chloride, a suspension of ... terol crystals, or a suspension of diatomaceous earth.

A. G. Cross.

XI. GENERAL PATHOLOGY

574. **Researches in Melanotic Tumours of the Eye.** (In Bulgarian.) C. PASCHEFF. *Ann. Rep. Univ. Sofia, Fac. of Med.*, 26, 144-177. 1947. 19 figs. 19 ref.

The author draws attention to the various potential pigment-forming cells in the eye: the melanoblasts of the retina, chromatophores of the uveal tract, nævus cells, and the melanoblasts of the basal epithelial layer of the conjunctiva. All these can be affected by simple hyperplasia or by neoplastic processes.

Melanohyperplasia includes congenital and acquired melanosis, pigmented nævi and simple melanomata of 3 types; these last are epithelial melanomata (floccules), melanophoromata (nævi of the uveal tract), and mixed melanomata.

Melanoblastomata include epithelial types occurring in the retina, the ciliary epithelium and the conjunctiva; connective tissue types of the choroid the conjunctiva and the orbit; and conjunctival næval tumours. All these types are usually monocular and very malignant.

[The author's classification, consistent though it may be with the diversified morphology of ocular melanotic tumours, will hardly upset the views of Masson, Ewing and others that all malignant melanotic tumours, pigmented nævi, etc., are of neuroepithelial origin.]

A. J. B. Goldsmith.

575. **Pigmented Tumours.**

A. B. REESE. *Amer. J. Ophthal.*, 30, 537-565. May, 1947. 16 figs. 55 refs.

The thesis of the author is that while many tumours possess the common factor of being pigmented they have fundamental clinical and histological differences which call for a more explicit terminology than the all-embracing name melanoma.

A cell which produces melanin is a melanoblast. Melanin is the product of the action of a specific oxidase on a premelanin substance "dopa," though the origin and mode of action of the oxidase is not known. Some cells are normally or commonly melanoblastic, but any cell which has access to the oxidase, e.g. by proximity to tissue which is producing it, may assume that role. This is of clinical importance. It explains the *café au lait* hue of the skin in neurofibromatosis, the fact that skin and conjunctiva adjacent to or in contact with a pigmented tumour may be pigmented although outside the limits of the growth, and the benign pigmented patches which occur on the iris of an eye inhabited by a malignant tumour.

The action of the oxidase is reversible so that pigmentation may regress. Increase in pigmentation does not necessarily imply growth; a nævus for example, is commonly non-pigmented at

birth and its later pigmentation is apt to give a false impression that it is a recent development or is growing. Normal pigmentation has a well-known association with endocrine activity and this is reflected in the behaviour of pigmented tumours, such as the pigmentation of congenital naevi which commonly occurs at puberty.

After discussing these general aspects of the subject the author offers as a working hypothesis a list of various types of melanoblast from which arise types of pigmented tumour. For the arguments with which he supports his views and for histological details the reader is referred to the original article. The suggested terminology of the tumour concerned is given in parenthesis.

I. *Neurogenic melanoblasts.*

- (A) The Schwann cell : These cells which ensheath peripheral nerves are not normally pigmented but commonly become so. They give rise to orbital neuromata (non-pigmented and benign) and a certain proportion of uveal melanomata, growing from branches of the ciliary nerves.
- (B) The Nævus cell : These occur at sensory nerve terminals and arise from those Schwann cells which become modified to form the various sensory end organs. Nævus cells, therefore, imitate in morphology and situation any stage of development of these end organs. The more superficial they are the more advanced their development, and the more pigmented. In ophthalmology naevi are found on the lids and conjunctiva, especially the caruncle. They are congenital and are usually non-pigmented at birth, but acquire pigment commonly between 4 and 14 years of age. They very rarely become malignant. (Tumours arising from A or B :—benign and malignant neurogenic melanomata.)
- (C) Melanoblasts of the Secondary Optic vesicle.
 - (1) Pigment epithelium of retina and ciliary body. Proliferation of this is always secondary to a pathological process such as inflammation which is usually old and finished. It is thus a hyperplasia and not new growth. The latter occasionally assumes malignancy ; hence the importance of removing blind painful eyes whatever the original disease. (Benign and malignant neurogenic melanoepitheliomata.)
 - (2) Muscles of the iris. These give rise to spontaneous tumours (leiomyomata).
 - (3) Pigment epithelium of the iris. Tumours arising from this layer may be secondary to hyperplasia due to old inflammation or spontaneous neoplasms. (dictyomata.)
- (D) Melanoblasts of the leptomeninges : These give rise to benign and malignant tumours of the optic nerve sheath. (Melanoblastic meningiomata.)

II. *Ectodermal Melanoblasts.* The original cells in this case are considered to be the basal cells of the dermis. They become melanoblasts and give rise to two types of new growth : (a) pre-cancerous melanosis which appears at about middle age as diffuse non-elevated pigmented patches commonly affecting lids and conjunctiva ; (b) malignant melanosis which arises from the former type sooner or later and is a diffuse growth of great malignancy. It is to be distinguished from naevi in the same situation. (Pre-cancerous and cancerous melanosis.)

III. *Mesodermal Melanoblasts.* These occur normally in the uvea and are true melanoblasts though they lose their "dopa" reaction early in life. The author, therefore, calls them chromatoblasts as opposed to the accepted name chromatophores. The only other sites where mesodermal chromatoblasts occur are in the atavistic rests of a pigment system, i.e., sacral and extrasacral mongol spots. "Blue naevi" are benign tumours arising from such rests. They occur on the lids and conjunctiva. (Tumours arising from mesodermal chromatoblasts are termed benign and malignant chromatogenic melanomata.)

Tumours of the uvea may thus be of two distinct types, neurogenic—arising from Schwann cells, and chromatogenic—arising from mesodermal chromatoblasts. Among several differences which the author enumerates, the latter are the more malignant.

A. Lister.

576. Some Cases of Eye Tumors in Turkey. (In Turkish.)

N. F. AYBERK. *Goz. Klinigi*, 2-3, 33-43, 57-66. March-April, May-June, 1947. 17 figs.

The author gives a general survey of eye tumors. Twenty-seven cases of different types have been examined in 72,000 patients ; 13 being epitheliomata of the eyelids, one angioma and one corn of the same region. There were two cases of conjunctival papilloma, seven cases of epibulbar carcinoma, one primary malignant melanoma of the choroid and two cases of glioma.

C. Ogen.

577. Tuberculosis and the Eye. (Gruźlica a oko.)

J. SZMYT. *Głos Służby Zdrowia*, 1, 41. Jan., 1947.

A general survey of the subject.

W. H. Melanowski.

578. Calcification Occurring in the Eye.

P. B. ENGLISH. *Med. J. Australia*, 1, 549-551. May 3, 1947. 2 figs. 21 refs.

A résumé of the literature of calcification in the ocular tissues is given, and a case is described in which calcification involved the sclera, lens and vitreous; it was impossible to identify the retina and choroid. The eye had been injured some 14 years before enucleation, and the calcification was obvious on X-ray films. The blood calcium was 15 mgms. per 100 ml.

A. J. B. Goldsmith.

XII. GENERAL BACTERIOLOGY AND IMMUNOLOGY.

579. Assessment of Allergy in Patients with Ocular Diseases of presumed Tubercular Aetiology. (Ricerche allergometriche in soggetti affetti da malattie oculari a presunta etiologia tuberculare.)

vitreous hæmorrhage
of relapsing vitreous
(14 out of the 17 cases
in sympathetic ophthalmia makes it unlikely
a tuberculous aetiology.

G. Cristini.

XIII. GENERAL THERAPEUTICS

580. Stabilisation of Penicillin Solutions with Sodium Citrate.

L. HAHN. *Lancet*, 252, 408-410. March 29, 1947. 1 fig., 2 refs.

By means of experiments in the U.N.R.R.A. Glyn Hughes Hospital, Belsen, with the agar-cup method applied to Petri dishes spread with *Staph. aureus* it is shown that sodium chloride 0.9% containing sodium citrate in concentrations of M/1 to M/100 stabilizes sodium penicillin solutions at 100° C. and at room temperature when mixed with them in the proportion of 1:4. If the original solution containing 4 units per ml. produces an inhibition ring of 19 mm. diameter, a solution heated to 100° C. for 15 minutes produced a ring of 18 mm., and after heating for 1 hour it produced a ring of 16 mm. Ampoules containing the penicillin-citrate-sodium chloride mixture could be boiled (to sterilize) for 10 minutes and then kept 23 days at room temperature without much loss of activity. The optimal concentration of citrate is probably about M/300 to M/400. The stabilizing action of citrate and sodium chloride is greater than that of phosphate. Citrate with sodium chloride is more effective than citrate alone.

F. Hawking.

581. Ophthalmological Experiences with Penicillin. (Augenärztliche Erfahrungen mit Penicillin).

K. HRUBY. *Wien. klin. Wchnschr.*, 59, 240-244. April, 1947.

1. *Gonococcal ophthalmia*: In the new-born, instillation of 250 O.U. per cc. every 10 minutes for 12 hours is recommended. If the cornea is involved, 2,000 O.U. should be injected under the conjunctiva (how often is not stated). In the adult 3 subconjunctival injections of 10,000 O.U. 8 to 11 hourly was effective.

2. *Post-operative infection after cataract extraction*: This rose to 2.2% under unfavourable war conditions. Subconjunctival injections of 20,000 O.U. twice daily were effective, assisted by such measures as evacuation of the hypopyon, short wave irradiation (presumably diathermy), sulphonamides and milk injections. No eye has been lost since penicillin therapy was introduced. In 9 cases the ultimate visual acuity varied from 1/24 to 6/36.

Instillation of 500 to 1,000 O.U. per cc. for some days before operation and the subconjunctival injection of 20,000 O.U. per cc. immediately after complicated operations were effective prophylactic measures.

3. *Severe conjunctivitis with marginal corneal ulcers*: Subconjunctival injections of 20,000 O.U. per cc. for 5 days was effective.

4. A case of *metastatic ophthalmia* in an infant was successfully treated.

H. L.

582. Stability of Penicillin in Ophthalmic Solutions.

E. E. GROSSMANN. *Arch. Ophthalm.*, 37, 167-174. Feb., 1947. 1 fig. 8 refs.

The potency of penicillin was tested in isotonic solutions of sodium chloride, in distilled water, in certain ointment bases, in cod-liver oil, in olive oil, in plasma, and in serum albumin. These were kept at room temperature which varied from 80° to 100° F. (26.6° to 37.8° C.). The strength of each preparation was 500 units per ml. or gramme. The plasma and serum preparations showed greater stability than other preparations and of these the serum had certain advantages although it retained a lower potency than the plasma solution. Tables show that 74% of the original potency remained after 14 days with plasma containing 500 units per ml. Details of the technique of testing the potency are given.

H. Neame.

583. Experiences with Penicillin in Ocular Diseases.

A. FEIGENBAUM and J. LANDAU. *Harefuah*, 32, 73-74. Feb., 1947.

Clinical experiences with penicillin are given in some 70 cases. The local use of the drug applied as early as possible was of great value against all kinds of staphylococci in cases of corneal ulcers with hypopyon, post-operative infections of the eyeball, severe metastatic inflammations, late infection after fistulizing operations; it was also very useful in infective blepharitis. When administering injections into the anterior chamber or into the vitreous body, no more than two or three injections may be given because of the possibility of untoward reaction in the tissue; for subconjunctival injections there is no such limitation. Penicillin has a high prophylactic value in the preparation of the conjunctival sac before operations, in plastic operations and in fresh injuries.

Mitterstein.

584. Penicillin Treatment of Eyelid Infections.

C. A. NOE. *Amer. J. Ophthalm.*, 30, 477-479. April, 1947. 1 table. 8 refs.

The results of treatment of 55 cases of conjunctival and eyelid infections with penicillin are tabulated. Allergic dermatitis was noted in 16% of the cases. The results for the group as a whole were not superior to those shown by other forms of therapy. In a few individual cases, however, the results were remarkable.

A. Lister.

585. Danger of Penicillin Therapy in Active Uveitis.

E. R. YASUNA. *Arch. Ophthalm.*, 37, 598-607. May, 1947. 41 refs.

The author recapitulates the pharmacology and describes the therapeutic value of penicillin in ocular infections. Concerning the value of penicillin in cases of uveitis the author cites reports from a series of cases treated in military hospitals. Only in cases of acute irido-cyclitis was significant improvement noted and in these the improvement appeared to be no greater than with the ordinary forms of treatment.

Two cases of acute irido-cyclitis are described, occurring in patients with a previous history of gonorrhœa. Each of the cases was treated with atropin, intravenous injections of typhoid vaccine and intramuscular injections of penicillin. In both the uveitis became progressively worse; on cessation of penicillin therapy, while the atropin and typhoid vaccine were continued, the condition subsided rapidly. The author considers that the response of these two cases to penicillin therapy was the result of the lysis of bacteria, the circulation of the resultant products causing an inflammatory reaction in uveal tissue already sensitized to these toxins. Should it be decided that penicillin might be of value in clearing up a suspected focus of infection then medication should not be employed until a few months after the uveitis has subsided.

A. G. Leigh.

586. Penicillin Therapy in Ophthalmia Neonatorum. A. SORSBY.

Vide abs. 635.

587. Topical Use of Streptomycin in Wounds.

E. L. HOWES. *Amer. J. Med.*, 2, 449-456. May, 1947. 2 figs. 15 refs.

Not only are most of the common Gram-negative bacilli insensitive to penicillin but many of them manufacture penicillinase, which rapidly destroys penicillin. This is the cause of the failure of the latter as a topical application to infected wounds.

Streptomycin destroys Gram-negative bacilli in the presence of pus and without damage to the tissue cells. An ideal combination for treatment of an infected wound would therefore be a solution of streptomycin to kill the producers of penicillinase, followed by penicillin, both in the form of topical applications. Streptomycin in the strength of 200 units or microgrammes per ml. is the best non-toxic antibiotic which has so far been discovered for use against Gram-negative bacilli. Without it penicillin is unlikely to do much good in a mixed bacterial wound infection. No toxic effects from topical streptomycin are reported in the small series [not ocular] herein described.

G. F. Walker.

588. Streptomycin in the Therapy of Granuloma Inguinale.

R. B. GREENBLATT, H. S. KUPPERMAN and R. B. DIENST. *Proc. Soc. Exp. Biol. and Med.*, 64, 289-390. April, 1947.

The ophthalmic interest in this paper, which describes the (successful) treatment of 23 cases of granuloma inguinale by streptomycin, lies in the occurrence of toxic

manifestations affecting the mucous membranes in two patients after 10 days' treatment. One patient developed a maculo-papular rash on the limbs and lower jaw, with fine vesicular eruption and œdema of the lips: a second complained of a mild burning of the conjunctiva, which did not reappear when the drug was renewed after a short pause.

Stewart Duke-Elder.

589. Actinomycetin.

M. WELSCH. *J. Bact.*, 53, 101-102. Jan., 1947. 7 refs.

A survey of the bacteriolytic properties of a large series of actinomycetes showed that about 20% of the strains examined gave a filtrate capable of lysing, at least partly, suspensions of *Staphylococcus aureus*. Such active filtrates have been called actinomycetin. Since, however, actinomycetin is a crude filtrate, it cannot be stated that it is an antibiotic, but rather that it contains one or more antibiotic agents.

R. Wien.

590. Vivicillin in Ocular Diseases. (La Vivicillina nelle affezioni oculari.)

A. GRIGNOLO. *Boll. d'Ocul.*, 26, 179-188. March, 1947. 4 refs.

The author performed clinical and bacteriological researches on a new antibiotic "Vivicillina" derived by suspending living *Penicillium Notatum* in a particular culture medium. This preparation proved active against those germs that are insensitive to ordinary penicillin. This product was used by conjunctival instillation, corneal baths, intramuscular injections, and pack-baths on the eye-lids.

The author obtained very good results in ulcerative blepharitis (20 cases), fairly good results in conjunctivitis due to streptococci, staphylococci and from the diplo-bacillus of Morax-Axenfeld. Gonococcal conjunctivitis, Koch Weeks' injections, ulcers with hypopyon and iridocyclitis are less amenable or do not respond to the treatment.

G. Cristini.

591. Intra-Venous Injections of Novocaine in the Treatment of Visual Disturbances Caused by Arsenical Trypanocides. (Essai de traitement par la novocaïne intraveineuse des troubles visuels causés par les arsenicaux trypanocides.)

H. LOROFF. *Presse Méd.*, No. 38, 435. June 28, 1947.

The author tried intra-venous injections of novocaine for blindness following injections of trypanamide at Labé (French Guinea), 5 to 15 injections of 10 cc. 1% novocaine in sterile distilled water or saline being given. Eleven cases were treated with seven cures, two improved and two failures. In seven cases of total blindness there were three recoveries and two improved.

S. Vallon.

592. "Plesio-roentgentherapy" in Ophthalmology. (La plesioterapia in oculistica.)

T. ANGIUS and G. MOJNE. *Rass. Ital. d'Ottal.*, 16, 107-130. March-April, 1947. 6 refs.

"Plesio-roentgentherapy" or X-ray contact-therapy has been introduced by Chaoul who built a tube which permitted the application of X-rays at a very short distance. In consideration of the usefulness of this treatment in superficial diseases, the authors have tried it in a series of affections of the eye; they used small stimulating doses with the following technique: KV. 60; Ma. 2; field-focus distance, 6 cm.; doses 100 r/m, applied every two days, in courses of 4 applications (Gorla-Siama set). The anticathode was provided with the limiting set Nr. 9 of Chaoul and, at the end of it,

another small limiting apparatus devised by Rossi was applied. Every effort has been made to measure exactly the dosage—a point stressed by the authors. 91 cases are recorded including the following diseases: herpetic keratitis (22), acute pemphigus (1), corneal ulcer (20), hypopyon keratitis (18), ulcerated corneal trachomatous pannus (8), phlyctenular keratoconjunctivitis (4), lymphatic keratitis (1), pustulous keratitis (1), rosacea keratitis (1), ulcerated leucoma (4), secondary glaucoma (1), hæmorrhagic glaucoma (2); pterygium (2), iridocyclitis (5), iritis (1).

The authors conclude that plesio-roentgen therapy with small doses should always be used in herpetic keratitis in which they obtained remarkable successes, and is advisable in all types of keratitis which resist treatment and in which corneal sensitivity is lowered; the treatment must be early, must not exceed the total amount of 400 r/m. and must be discontinued as soon as improvement becomes evident.

N. Pagliarant.

593. The Use of X-ray Therapy for Retinal Diseases Characterized by New-formed Blood Vessels. (Eales' Disease, Retinitis Proliferans) : A Preliminary Report.

J. S. GUYTON and A. B. REESE. *Trans. Amer. Acad. Ophthalm. and Otolary.*, 52, 525-546. May-June, 1947. 2 colour plates. 1 table. 22 figs. 3 refs.

The authors' preliminary report is in sequence to the work of Martin and Reese on the treatment of retinoblastoma by focused X-ray therapy in typical Eales' disease, atypical Eales' disease, and diabetic retinitis proliferans. Twenty-two eyes in fourteen patients have been so treated.

The technique involves the application of 500 r. through a temporal portal thrice weekly and the optimum total dose appears to be between 3,500 and 6,000 r. The nasal portal has been found to be unsatisfactory. X-rays are focussed exclusively to the posterior half of the globe.

The cases are divided into three groups :—

(1) *Typical Eales' disease*. 8 cases. Six patients showed a positive reaction to a tuberculin intracutaneous test ; two showed evidence of past tuberculosis ; and one proved negative. All showed re- of past tuberculosis ; and one proved negative. All showed re- current retinal and/or vitreous hæmorrhages. After X-ray therapy, varying between 15,000 r. in the earlier cases to 4,000 r. in the later cases, the results showed that further hæmorrhage occurred in only one instance. Newly proliferated vessels tended to retrogress and disappear and there was similar regression of retinitis proliferans and of exudates.

(2) *Atypical Eales' disease*. 4 cases. One of these cases was diabetic but without retinopathy ; two cases were sensitive to a

tuberculin test. These cases received between 6,000 and 4,000 r. and the results were again favourable in the absorption of newly-formed vessels and of the vitreous hæmorrhage in greater or less degree.

(3) *Diabetic retinitis proliferans*. Two cases of severe diabetic retinopathy were similarly treated with 3,500 to 4,000 r., but showed fresh retinal hæmorrhages subsequently. There was, however, some regression of the vessels in the vitreous.

The authors observe that further time must elapse before the permanent effects of treatment can be correctly assessed, and point out that the basic object of treatment in these cases has been to achieve sclerosis of newly-formed vessels.

P. Jameson Evans.

XIV. GENERAL OPERATIVE SURGERY.

General Technique

594.† Extensive Traumatic Iridodialysis with Repair.

F. R. NEWELL. *Amer. J. Ophthalm.*, 30, 695-697. June, 1947. 1 fig. 15 refs.

Traumatic iridodialysis may vary in size from a small defect visible only with a slitlamp to a detachment of the entire ciliary border. Small defects, those covered by the lids and asymptomatic cases, do not require treatment, whereas large defects causing symptoms such as monocular diplopia, dazzling of vision and photophobia should be corrected surgically if unassociated with further ocular damage. Such a state of affairs is relatively rare but the author describes a case in which the only apparent damage to an eye, which was struck by a small branch of a tree, was a separation of the entire nasal attachment of the iris extending from 10 o'clock to 7 o'clock. The chief complaint was of dazzling and photophobia in bright light, unrelieved by tinted glasses. The vision, which could not be improved, was 20/50. Six days after the injury a conjunctival flap was raised and a corneoscleral suture placed at the limbus at 2 o'clock in such a manner that it could be tied over the cornea rather than the sclera. A small keratome incision was made between the loops of the suture, and the peripheral border of the iris was grasped with an iris hook and drawn into the wound. With an assistant drawing up the suture whilst the hook was simultaneously disengaged from the iris it was possible to incarcerate a small shred of tissue in the wound without prolapse. The conjunctival flap was then drawn over the wound and sutured in place. Pilocarpine solution was instilled. All the sutures were removed on the seventh day. Six weeks later a similar procedure was performed at the 5 o'clock meridian. This resulted in the restoration of a central round pupil.

The vision was 20/30 correctable to 20/20. The pupillary reaction to light was present only in the normally attached segment of the iris but the response of the pupil to mydriatics and miotics appeared normal.

A. G. Leigh.

595. **Nylon Thread in Ocular Surgery.** (Le fil de nylon en chirurgie oculaire).

P. HALGRON and H. A. AITOFF. *Ann. d'Ocul.*, 180, 158-168. March, 1947. 1 table. 1 fig. 13 refs.

The chemistry of nylon and its physical properties in thread form are discussed. Nylon absorbs relatively little moisture, has no capillary action, and presents no superficial crevices in which tissue could penetrate in course of healing. There is less tissue reaction to nylon than to silk. Nylon threads were as solid as hairs of the same calibre but certainly more supple.

L. H. Savin.

Anaesthesia.

596. **Orbital Injections of Alcohol.** (Les injections intra-orbitaires d'alcool.)

A. MAGITOT. *Ann. d'Ocul.*, 180, 107-110. Feb., 1947.

The author considers alcohol injections into the orbit of great value in cases of gonococcal iritis, parenchymatous and phlyctenular keratitis, as well as in glaucomatous conditions. He considers that the improvement is largely due to a blocking of the vaso-motor reflexes as well as to the analgesia.

His technique does not differ from that in general use, but he emphasizes the importance of a partly blunted needle to avoid damage to veins and the formation of an orbital hæmatoma.

He found the only complication in several hundred cases to be a temporary paralysis of one or more of the extrinsic ocular muscles: this has always passed off completely in 3 to 8 weeks. No case histories accompany the article.

L. E. Werner.

597. Basal Anæsthesia in Ophthalmology by Scopolamine-morphine-ephedrine. (L'anesthésic de base en ophthalmologie par la scopolamine-morphine-éphédrine).

1 VOLPERS *Ann. d'Genev.* 189 139-158 March, 1947.

bromides and barbiturates.

L. H. Savin.

Prostheses

598. **Improvement of the Prosthesis after Enucleation by Inclusion of the Head of the Femur of the Newborn in Tenon's Capsule.** (Amélioration de la prothèse après énucléation par inclusion de tête de fémur de nouveau-né dans la capsule de Tenon.)

L. PAUFIQUE. *Ann. d'Ocul.*, 180, 129-139. March, 1947. 5 figs. 26 refs.

The disadvantages, mainly æsthetic, of simple enucleation are discussed and the various methods of overcoming these are reviewed. [No mention is made of Cutler's implant.] The author has followed Poulard's modification of Mule's operation and claims excellent results, but mentions the dangers of leaving the scleral shell, especially the risk of sympathetic ophthalmia, quoting cases.

In 37 cases where carrying out Poulard's operation was inadvisable he has enucleated the eye and used the head of the femur of a newborn infant as an implant into Tenon's capsule. The head of the femur is placed for 8 hours in 20% formalin and then washed for 4 hours in running water. It is then bathed successively in alcohol 40, 60, and 80%, and is kept at the end of 8 days in a flask of 95% alcohol until wanted. Half an hour before use the implant is placed in warm saline to eliminate the alcohol.

Enucleation is performed with silk traction sutures in each rectus muscle, absolute hæmostasis being important. Two 000 catgut sutures on curved needles are passed through the articular surface of the implant 4 mm. apart and it is then placed inside Tenon's capsule, the opposing rectus muscles being sutured over it with overlap; the sutures through the implant are then tied, one over the superior, the other over the inferior rectus. The conjunctiva is closed with silk; this suture can be removed on the eighth day. The prosthesis can be fitted after 3 weeks. For a delayed insertion, a conjunctival incision is made from a point corresponding with the position of the limbus downwards and outwards, at 7 o'clock in the right eye and 5 o'clock in the left eye. A double armed silk suture is passed through the implant, the needles being brought out at the inner angle, one above and one below the caruncle.

In 5 cases the implant was extruded. Late results (the longest period of follow-up being more than 1 year) are said to be excellent, with good movement and position of the prosthesis.

[It is rather doubtful whether these more complicated techniques have any eventual advantage over the simple implant into Tenon's capsule. Immediate results with Cutler's original implant are excellent but often, after a period, show little more movement than with a simpler technique.]

R. W. Stephenson.

599. **Acrylic Ocular Prosthesis—A New Method.**

F. J. SELLERS. *The Optician*, 113, 237-242. 1947. 7 figs.

A simplified method of making plastic ocular prostheses, including pre-processed acrylic irides, is described. The stages of fabrication are (1) selection of matching iris,

(8) final polish and fit.

The eye thus made from a socket impression is claimed to have contact with residual muscle tissue which gives motility and a more realistic appearance. The eye, which is unbreakable, non-porous, and stain resisting, should last for 15 to 20 years.

The most important factor to obtain a properly fitting eye is the socket impression. This was made with zelex, a sodium alginate dental impression material.

B.O.A.

(In Hungarian.)

Hungarian Ophthal. Soc. Reported in *Orvosok*

Discussion on plastic prostheses.

P. Weinstein.

Plastic Surgery

601. Reconstruction of the Eyelid.

A. E. SHERMAN. *Trans. Amer. Acad. Ophthal. Otolary.*, 52, 514-524. May-June, 1947. 9 refs. 21 figs.

If the eyelid defect is of skin only the author advises a free graft from the upper lid of the opposite eye, or of post-auricular skin, if this is not available. For vertical whole thickness defects Wheeler's "halving operation" is the best procedure, and a defect covering 1/3 of the eyelid can be filled by this means.

When the defect covers half the eyelid the operation of choice is the "Hughes procedure", whereby, after excising the lash margin, the lid remains are united to the uninjured opposing lid in two layers. After a lapse of time sufficient for this union to become firmly established the lids are re-divided along a new line, so that part of what was once upper lid now appears in the lower, or vice versa. This method the author thinks preferable to the temporal flap, which produces a thick and ugly lid.

Seymour Philips.

602. New method for the repair of eyelid defects. (In Hungarian.)
The author describes a new method for the repair of eyelid defects. It consists in the use of a free graft from the upper lid of the opposite eye, or of post-auricular skin, if this is not available. For vertical whole thickness defects Wheeler's "halving operation" is the best procedure, and a defect covering 1/3 of the eyelid can be filled by this means.

Bagginess below the lower lid is due to the accumulation of fat; it may be improved by an open suturing of the orbicularis oculi muscle. Japanese silk is employed. "tailor's thread".

P. Weinstein.

XV. CONGENITAL DEFORMITIES

603. Rubella during Pregnancy and Congenital Anomalies. (Rubeola graviditatis et congenitala missbildningar.)

H. GRONVALL and P. SELANDER. *Svenska Läkartidn.* (Stockholm), 44, 1108-1109. May, 1947.

A girl, 5 years of age, whose mother had rubella in the first month of pregnancy, presented a congenital unilateral cataract, microphthalmos, cardiac septal defects, mental retardation and a poorly developed physical condition. The cataract was absorbed spontaneously.

Among 21,000 women the authors found only 18 cases of rubella in pregnancy [stage of pregnancy not mentioned] and none of the children presented congenital anomalies of the type described above.

Erik Godtfredsen.

604. Modern Conceptions on Anomalies of the Crystalline Lens and its Vascular Tunic in the Newborn. J. HOROWITZ and E. SCHIFF.
Vide abs. 704.

605. Apparent Blindness in the Newborn with Grey Pseudo-atrophy of the Optic Nerve. (La cécité apparente chez le nouveau-né. La pseudo-atrophie grise du nerf optique.)

BEAUVIEUX. *Arch. d'Ophthal.*, 7, 241-249. 1947. 2 plates. 5 refs.

A record of eight personal cases, with reference to reports of similar cases published by others, of a temporary visual affection of the newborn in which an original complete blindness recovers completely or partially after a variable period of some months. Almost all occur in premature infants.

Features of the syndrome are: total blindness, marked unco-ordinated movements of the globes, complete absence of the pupillary reflexes, moderate mydriasis, slate-grey coloration of the discs with or without a pigment crescent and marked absence of choroido-retinal pigment.

The cases are divided into two groups: (1) Those which become completely normal both as regards vision and fundus appearance. (2) Those which regain some measure of vision more slowly and in which persist various sequelæ.

It is suggested that the cause is delayed myelinization of the lower visual paths. In his own studies the author confirms earlier work that normally this myelinization proceeds as follows: 5th month, at geniculate bodies; 6th month, to chiasma; 7th month, to optic foramen; 8th month, to level where vessels become central; at term, to lamina cribrosa. That of the higher visual paths begins at the occipital centres at the end of intra-uterine life and proceeds distally during the following months. He believes, with Fleschig, that the myelin sheath is indispensable to the conduction of light impulses, and considers that automatic vision at birth depends on the completion of myelinization of the lower paths and that the development of conscious vision occurs with myelinization of the higher paths. If, for some cause, a delay of some weeks occurs in this normal programme, there would be produced the clinical picture presented by these cases. He considers also that the absence of choroido-retinal pigment points to a parallel development of this and the myelin in the lower visual paths. Against this hypothesis is the fact, pointed out by Magitot, that the pupillary reflex may be present in premature infants as early as the fifth or sixth months, but Westphal believes that the afferent pupillomotor fibres are myelinated at the fifth month, which would account for this.

Of seven cases of this syndrome which the author has followed up for twelve years, three have absolutely normal vision, while the other four have defective vision with some other sequelæ. The latter group show signs of some familial or congenital condition which might be the cause of delay in myelinization, while in the former group the cause remains unknown. He concludes with a warning that although the fundus picture is characteristic there may sometimes be confusion with congenital optic atrophy, and that therefore prognosis should at first be guarded.

R. W. Stephenson.

606. Retrolental Fibroplasia—An Eye Defect in Premature Infants.
P.

inf
crystalline lens, with only a few branches of the tunica vasculosa lentis, and the presence of the hyaloid artery. Sometimes there may be massive retinal separation. The iris angle may not differentiate, and cutaneous angiomas may be present, but no other congenital abnormalities are present either in the eye or elsewhere in the body. Nystagmus is often present and the anterior chamber may be very shallow, so that the lens becomes adherent to the posterior surface of the cornea. Corneal opacities may be found and the eye may be of smaller size than average. Posteriorly is the most constant accompanying affected more than males. The etiology is difficult to differentiate the condition from retinoblastoma, and some eyes are removed when the diagnosis is uncertain. Children with this condition are often blind or partially sighted and they require special care.

A. G. Cross.

607. Hereditary and Familial Megalocornea. (La mégalocornée héréditaire et familiale.)

R. NATAF and P. FONTAN. *Ann. d'Ocul.*, 180, 267-271. May, 1947. 4 figs.
Report of a case seen when aged 20 years. Corneal diameter 16 mm. right, 17 mm. left. Partial embryotoxon right and left, and a deformation of a portion of the lens and zonule in the left eye. Maternal grandfather and one brother also affected.

R. W. Stephenson.

608. Goniotomy for Congenital Glaucoma. Urgent Need for Early Diagnosis and Operation. O. BARKAN.
Vide abs. 728.

609. Infantile Glaucoma at the National Institution for Juvenile Blind. P. BAILLIART
Vide abs. 726.

610. A Case of Bilateral Non-attachment of the Retina. I. WADENSTEN.
Vide abs. 690.

XVI. INJURIES

Radiational

611. The Medical Sequelæ of the Atomic Bomb Explosion.
G. V. ANDERSON, et al. *Ann. N.Y. Acad. Sci.* 134 1143-1148. Aug. 2, 1947. 10 figs.

*Chemical***612. Quinone Vapors and their Harmful Effects. I. Corneal and Conjunctival Injury.**

J. H. STERNER, F. L. OGLESBY and B. ANDERSON. *J. Industr. Hyg. and Toxicol.*, 29, 60-73. March, 1947. 7 figs. 5 refs.

This paper summarizes the clinical findings in about 50 cases of eye injury occurring in workmen exposed to quinone vapour and hydroquinone dust. Hydroquinone is used as a photographic developer, a dye intermediate, and in various chemical syntheses. It is made by the oxidation of aniline to quinone ($C_6H_4O_2$), and the reduction of the latter to hydroquinone ($C_6H_4(OH)_2$). A good deal of the industrial manufacture is carried on in closed vessels, but there are leakages at numerous points. The oxidation-reduction system of hydroquinone=quinone is a relatively labile one, and both products are present in the workrooms, causing continued eye irritation, as shown by conjunctivitis, photophobia, moderate lacrimation, and a burning sensation. Injury to the eyes, involving conjunctival staining and corneal staining and opacities, has been previously reported by several investigators. In the present observations the corneal injury was found to be of two types: (1) a diffuse greenish-brown stain chiefly in the superficial layers of the cornea and confined to the inter-palpebral fissure; (2) greyish-white opacities, varying in size and shape from very fine, translucent, and highly refractile dots to larger, confluent, and branching flecks. The opacities may be found throughout the substantia propria and may involve the deeper Descemet's membrane. The conjunctival lesion is a pigmentation in the interpalpebral fissure, varying from a slight diffuse brownish tinge to a dense brownish black. The pigment deposit occurs in the form of spheres, some of which are quite large, and is most marked in the older patients of long employment. Some of the characteristic lesions are well illustrated by the coloured plates accompanying the paper.

Repeated measurements of visual acuity were made on all the employees. In a few cases there was an appreciable loss of acuity due especially to acute corneal irritation. As this subsided vision improved, but it is doubtful if there would be much improvement in cases where the defect was due to the greyish-white intra-corneal opacities. Numerous blood counts and estimations of hæmoglobin, sedimentation rates, and icterus index were made, but they did not reveal any evidence of systemic injury. It was concluded that quinone vapour is probably the major factor in the production of the lesions described. The stain is an end-product of the oxidation of quinone to hydroxyquinone and the subsequent polymerization of this substance to humic acid ($C_6H_4O_3$).

H. M. Vernon.

613. Quinone Vapors and their Harmful Effects. II. Plant Exposures Associated with Eye Injuries.

F. L. OGLESBY, J. H. STERNER and B. ANDERSON. *J. Industr. Hyg. Toxicol.*, 29, 74-84. March, 1947. 11 figs. 4 refs.

In the manufacture of quinone, aniline and sulphuric acid are mixed in large tanks. The mixture flows to oxidation tanks where manganese dioxide is added in order to complete the oxidation to quinone. The quinone is distilled from the mixture and reduced to hydroquinone with the aid of iron. The reduced mixture is run through filter presses and the filtrate passed into crystallizers, thence to centrifuges and dryers. The amounts of quinone encountered at various stages of manufacture varied from 0.01 to 3.2 parts per million (p.p.m.), but the high values obtained at first were subsequently reduced by more effective ventilation and isolation of the operations which produced the high concentrations. The odour of quinone becomes perceptible at 0.1 p.p.m., is definite at 0.15 p.p.m., irritating at 0.5 p.p.m., and markedly irritating at 3.0 p.p.m. A value of 0.1 p.p.m. has been selected as a tentative maximum allowable concentration of quinone vapour.

H. M. Vernon.

614. Conjunctivitis due to Exposure to Dimethyl-sulfate.

H. J. STERN. *Brit. J. Ophthalm.*, 31, 373-375. June, 1947. 4 refs.

A mild case of conjunctivitis caused by dimethyl sulphate is reported; there was occasional slight itching but no lacrimation or secretion, and no organisms were found. The bulbar conjunctiva was alone affected in the exposed area; it was slightly oedematous, with an opaque appearance, more pronounced when adrenaline was instilled. Temporary absence from work, or bathing with borax, caused improvement, and complete cure followed change of work. Severe cases have been reported by others, with violent conjunctivitis, necrotic patches on the palpebral conjunctiva, lacrimation, marked reddening of the tarsal conjunctiva, and greyish opacities followed by complete opacity of the cornea and detachment of its epithelium; one case had neurological signs. Most of the patients recovered.

Dimethyl sulphate is a colourless heavy oil, whose direct application to the skin produces a very intensive reaction and whose vapours have an irritative effect on mucous membranes and may cause serious nervous symptoms. In the author's case the compound was being used in introducing the methyl group into certain chemical compounds, in which process it is stirred electrically and becomes very hot.

D. Matheson Mackay.

615. **Observations of Corneal Lesions in Burns by Lacrimal Tear Gas.** (Beobachtungen über Hornhautschäden bei Tränen-gasverätzungen des Auges.)

A. CZURDA. *Wien. med. Wchnschr.*, 97, 257-258 and 284-286. June, 1947.

Observations of 12 cases of burns by bromaceton and chloraceton. The men had been exposed to vapour of the substances in great dilution for half an hour to two hours. In some cases the liquid had got into the eye. Irritation appeared immediately in the latter cases, whereas in the first group of cases signs of irritation appeared after a considerable time. The symptoms were reddening of the eyes, lacrimation and opacification of the cornea, œdema of the corneal epithelium, sometimes erosions, dense opacities which gave the cornea the appearance of ground glass. In one case there was slight iritis. In all cases the cornea cleared up and no permanent lesions remained. Bromaceton and similar compositions cause, simultaneously with the opacity, a swelling of the corneal parenchyma to double the normal thickness.

These chemical substances are not as volatile as is generally believed; they stick to clothes and rooms for hours notwithstanding airing. They cause corneal lesions in minimal concentration. The lesions are the same whether the substances are concentrated or in extreme dilution. A characteristic feature is the tendency for the tissues to become sodden without being destroyed. Low concentrations with a slow action seem to have more effect than strong concentrations which react rapidly. There is little effect upon the deeper parts of the eye, but in general an individual susceptibility to bromaceton seems to exist. The visual prognosis is good unless the injury has been severe. It is not known whether a burn causes susceptibility to subsequent infections.

H. L.

616. **The Clinical Manifestations of Damage by Smoke to the Eye.** (Zur Klinik der Rauchschädigungen des Auges.)

ROGGENKÄMPER. *Klin. Monatsbl. f. Augenh.*, 111, 173-176. Jan., 1947.

The author works in a big town in the Ruhr which was bombed with the outbreak of many fires. In the first two days after the outbreak of the fire more than 350 patients attended the clinics with ocular injuries attributed by the author to irritation from smoke. The majority of the cases showed superficial conjunctival and corneal erosions which healed quickly. In two cases a parenchymatous opacity was observed which healed spontaneously in approximately ten days, without vascularization or scarring. In four cases the author saw disc-like ulceration with an epithelial defect, 4 to 5 mm. in diameter and a cloudy, deep opacity of the whole cornea showing deep interlacing striæ and slight iritis. There was no bacterial

infection. Healing took approximately eight weeks leaving central scars. The author assumes that the reaction is due to chemical injury from toxic compounds contained in the smoke.

Loewenstein.

617. Radio-autographic Studies of the Distribution of Lewisite and Mustard Gas in Skin and Eye Tissues.

D. J. AXELROD and J. G. HAMILTON. *Amer. J. Pathol.*, 23, 3, 389-398. 1947. 1 fig. 7 plates. 3 refs.

Mustard gas containing radio-active sulphur and lewisite containing radio-active arsenic were applied to human and pig skin and to rabbit eyes; the extent of fixation and distribution of the two substances in the tissues was studied by determining the location of radio-active material in sections taken at various times. The tissues were sectioned unfixed, frozen, or after formol fixation, and the sections mounted on slides were then apposed to a piece of X-ray film. After 1-3 weeks the films were developed and the degree and area of blackening showed the concentration and distribution of radio-active material. The sections were then stained for histological comparison.

Radio-active mustard gas was fixed in the epidermis and corium of pig and human skin taken 24 hours after exposure to mustard gas for 15 min. A longer period of exposure caused deeper penetration. Radio-active mustard gas was fixed mainly in the rabbit cornea with a little in the iris and lens if the eye were excised immediately after exposure. An eye excised 11 days after injury showed radio-active mustard gas throughout the cornea and hardly any in the iris or lens.

Radio-active lewisite was applied to human and to pig skin. It accumulated in the epidermis and particularly in the hair follicles. Sections were made 24 hours after injury.

British Abstracts.

618. Ten Cases of Chronic Industrial Mercurialism.
dieci casi di mercurialismo cronico professionale.)
E. C. *Tr. Rass. Med. Industr.*, 16, 1-15. Jan.-March, 1947. 6 figs. 16 refs.

In 1943 over a 100 cases of mercurialism occurred in two factories in Italy in which felt hats were made. Most of the patients were women. The authors describe 10 cases which were investigated. It was discovered that the air in parts of the works contained 0.001 mg. per cubic metre, which is supposed to be

10 cases. The tremor was constant, which ceased in sleep. It was most often affected. Tremor was often interrupted by clonus, and some sudden nocturnal movements, as distinct from tremors, were observed in some patients. There was evidence of extrapyramidal lesions in some patients or of a lesion of the pyramidal nerve axis. One patient had impaired co-ordination. It seemed that the cortex and cerebellum were particularly involved in all, which explains Charcot's view that many symptoms of mercurialism were hysterical. In addition to the dyskinetic and hyperkinetic phenomena, others were

noted of an akinetic-hypertonic quality from involvement of the globus pallidus. The references to these latter changes are rare in the literature. In 1935 Francioni carried out animal experiments which revealed lesions of the basal ganglia after mercurial poisoning. These lesions were more numerous and severe than those seen in the cortex.

G. C. Petlier (abridged).

619. Ocular Mercurialism. (Rtecica oka).

I. ABRAMOWICZ. *Polski Tygodnik Lekarski*, 21, 638. May, 1947.

A case described by author concerned a 57 years old woman. An obstinate blepharitis was treated for almost 10 years with 1-6.6% mercury ointment rubbed every evening into the skin of the eyelid. After this "treatment" the skin of the eyelids assumed a dark-grey colour with a bluish tint, and on the bulbar conjunctiva were found many dark patches. Biomicroscopical examination revealed that these patches consisted of dark areas in the conjunctival tissue around the perivascular lymphatics. Near the corneal periphery Descemet's membrane had a greyish-green tint and in the axial region the anterior capsule of the lens showed a dull brownish-yellow deposit associated with senile exfoliation on the lower edge of the pupillary area.

After 3 months' treatment with noviform ointment and cessation of mercury, no change was visible in the ocular tissues.

W. H. Melanowski.

620. First Aid for Chemical Eye Injuries.

P. M. VAN ARSDELL. *Trans. Amer. Acad. Ophthalm. and Otolary.*, 52, 573-583. May-June, 1947. 4 tables. 54 refs.

The author emphasizes the efficiency and safety of prolonged and thorough irrigation with water in all cases of external ocular injury by chemicals, and advocates that this alone should be carried out at the place of injury. Subsequent treatment should always be in the charge of an ophthalmic surgeon, to whom patients should be referred immediately after initial first aid treatment has been given. There follows a description, with clearly set out tables, of the effects anticipated from contact with acids, alkalies and salts, with comment on the associated skin lesions in the latter group. The increasing industrial use of and danger from chemicals is emphasized.

P. Jameson Evans.

Mechanical

621. The Regeneration of Wounds of External Membrane of the Eye in the Light of New Pathologico-anatomical Results.

E. T. LEVKOEVA. *Brit. J. Ophthalm.*, 31, 336-361. June, 1947. 14 figs.

In this article the author puts forward extremely interesting and original views on the healing of perforating corneal and scleral wounds. She suggests that in these wounds the essential union is produced not by the covering epithelium or episcleral tissues, but by the proliferation of the corneal corpuscles and fixed cells of the sclera respectively. She holds that, if the edges of the wound are not in perfect apposition, these cells proliferate and grow into the fluid media of the eye—the aqueous and vitreous. The cells are not governed by the usual laws of the formation of fibrous tissue but behave as if they were in tissue culture. Thus, in gaping corneal

wounds the corneal corpuscles proliferate rapidly, grow back into the aqueous, cover the iris and lens, and may even reach the vitreous. All this happens with very little or practically no evidence of inflammation—that is, without the appearance of exudate or inflammatory cells. It follows that a covering conjunctival flap may give but a fancied security. The essential point apart from the abscission of prolapsed intra-ocular tissues is the perfect approximation of the wound edges. The corneal or scleral sutures to effect this must be deep, so that the deep portions of the wound are in contact. This applies especially to the cornea, where the contraction of Descemet's membrane makes the posterior part of the wound gape more than the anterior.

Eugene Wolff.

622. New Thoughts in the Treatment of Ocular Injuries.

D. MARSHALL. *Trans. Amer. Acad. Ophthalm. and Otolary.*, 52, 237-241. Jan.-Feb., 1947.

As he says, the author set out to write this paper with the thought that out of the recent war must come ideas and methods of benefit in handling civilian injuries. On reflection he finds that, for the most part, war injuries of the eye have their counterpart in civilian life and are best cared for by following the standard methods adopted in civilian ophthalmology.

The article deals, in a brief way, with many of the surgical problems which confront a military ophthalmologist handling battle casualties. The repair of wounds of the globe, multiple corneal foreign bodies, socket implants, plastic surgery, the intra-ocular foreign body and its localization and chemical burns are the main points discussed.

There are no new methods or conclusions. In connection with the intra-ocular foreign body the author says: "The practice of our British allies of using a magnet pull as a test for foreign body before X-ray and localization finds little favour in this country." [Surely he is in error; this practice is quite exceptional.]

Desmond Douglas.

623. A Very Rare Ocular Operation. (Eine sehr seltene Augenoperation.)

F. K. LEYDHECKER. *Klin. Monatsbl. f. Augenh.*, 111, 181-183. Jan., 1947. 1 fig. 2 refs.

A minute copper splinter was localized with Vogt's bone-free X-ray technique (improved by the use of a dental film). An "electrical forceps" was used consisting of an ordinary bent iris forceps linked to a wireless set which produced a characteristic noise at the loudspeaker whenever contact was made or lost with the foreign body. Extraction of the splinter after iridectomy was successful and healing uneventful. With this kind of simple electric probe small splinters of metal can be distinguished from bone fragments.

Loewenstein.

624. Comments on Ocular Traumatology. (Comentarios sobre traumatologia ocular.)

J. A. SENA. *Arch. de Ofal. de Bs.As.*, 23, 67-96. Jan.-March., 1947. 3 tables. 5 figs. 16 refs.

The author briefly reports his experience regarding two aspects of ocular injuries: the radiological localization of intra-ocular foreign bodies and the medico-legal evaluation of industrial ocular accidents.

With regard to the first topic, the author discusses the radiological methods used in the Argentine until the appearance of the Sweet procedure. After approximately 20 years of personal experience with this method the author states that he believes it to be the most useful procedure for the diagnosis of intra-ocular foreign bodies.

The author's contribution to the study of the medico-legal aspect of professional ocular accidents is based on experience obtained in the examination of more than 7,000 injured workmen. He has worked out several tables for the evaluation of the workman's incapacity due to ocular lesions, explaining in a detailed manner the reasons on which they are based.

Moacyr Alvaro.

625. A Particle of Iron in the Vitreous Removed by the Scleral Route.
M. AMAT and G. MANSILLA. *Soc. Ofal. de Madrid*, meeting June 14, 1946. Reported in *Amer. J. Ophthalm.*, 30, 759-761. June, 1947.

Case report. Successful result using accepted method of approach. The author considers that the posterior route is the method of choice for extracting foreign bodies in the posterior segment.

A. G. Leigh.

626. Intra-ocular Foreign Body Unknown to the Patient.
H. CARRERAS. *Soc. Ofal. de Madrid*, meeting June 14, 1946. Reported in the *Amer. J. Ophthalm.*, 30, 758-759. June, 1947.

Case report. Following progressive loss of vision in the right eye over a couple of years the eye had now become painful and there was photophobia in his left eye. The patient could recall no injury. The eye was glaucomatous and a large patch of chorioretinitis was seen down and out. Following cyclodiathermy puncture the eye was exsised and a metal partiele was found embedded in the choroid. There was no evidence of siderosis.

A. G. Leigh.

627. Traumatic Heterochromia Iridis in a Seeing Eye after Iridodialysis. (Traumatische Heterochromie eines sehthuechtigen Auges nach Iridodialyse.)
W. DILTHEY. *Klin. Monatsbl. f. Augenh.*, 111, 183. Jan., 1947.

The author describes a localized group of pigmented naevi in a blue iris associated with an iridodialysis between one and two o'clock; this was assumed to be due to a birth injury.

Loewenstein.

628. Siderosis of the Lens and Vitreous.
J. R. FITZGERALD. *Chicago Ophthal. Soc.*, meeting April 15, 1946. Reported in the *Amer. J. Ophthalm.*, 30, 762. June, 1947.

Case report. History of injury in 1932, foreign body missed. Ten years history of impaired vision in eye.

A. G. Leigh.

629. Birth Trauma as Cause of Squint. O. HEINONEN.
Vide abs. 785.

630. Large Conjunctival Granuloma due to Vegetable Foreign Body. A. BONAZZI.
Vide abs. 650.

XVII. DISEASES OF THE CONJUNCTIVA

631. Some Causes of Pseudo-conjunctivitis. (Odmienne etiologicznie postaci zapalenia spojówek.)

K. NOYSZEWSKA. *Polski Tygodnik Lekarski*, 6, 175-177. Feb., 1947.

The authoress draws attention to the occurrence of changes in the conjunctiva similar to conjunctivitis, but due merely to hyperæmia of this membrane. The more common types of this "pseudo-conjunctivitis" are:—

1. Capillary stasis in the conjunctiva in the course of bronchial asthma or as a result of asphyxia.

2. Changes in conjunctival vessels associated with the universal sclerosis of old age.

3. Cases due to hypersensitivity of the cornea in neuroparalytic keratitis or caused by sinusitis or dental foci of infection.

Relief of the conjunctival symptoms is possible only if the ætiological factor can be treated satisfactorily.

W. H. Melanowski.

632. Segmental Juxta-limbal Vascularization: a Symptom of Mild Eczematous Conjunctivitis. (In Rumanian).

May-August 1947.

group have a violet colour, and the subepithelial group are blackish.

N. Blatt.

633. Morbus Reiteri.

M. ZEWI. *Acta Ophthal.* (Copenhagen), 25, 47-60. July, 1947. 12 refs.

Ten cases of Reiter's (or Reiter-Freund's) disease (polyarthritis, conjunctivitis and non-gonorrhœal urethritis) observed in the Ophthalmic Clinic of the University of Abo (Finland) are reported in detail. Since Reiter's original description of the syndrome in 1916 several similar cases have been reported, most of the cases in adult men. The present series comprised 6 females, and half of all the patients were not adult (4, 14, 15, 16, 17 years of age). The fully developed syndrome was found in 7 cases while 3 patients had only conjunctivitis and polyarthritis. In 9 cases the disease started with gastro-intestinal disturbances (diarrhœa with or without hæmorrhage). The patients had a febrile temperature lasting for several weeks and the blood-sedimentation rate was high. The joint symptoms were polyarticular associated with severe pain and of several months duration, but they ended with recovery. The ocular manifestation was in all the cases a catarrhal conjunctivitis with no specific signs. In seven cases (4 bilateral) there was found keratitis of a superficial type and two cases presented a slight optic neuritis.

All the ocular symptoms disappeared completely. The urethral symptoms were generally slight and transient. Treatment was symptomatic. Only in one case were there found Gram-positive cocci in the urethral secretion. From the conjunctival secretion bacteriological examination for bacteria were negative both in smears and in culture. The gonococcic-complement reaction was performed only in a few cases in which it was negative. Information regarding the Widal-test and the antistreptolysin-titre in the blood serum is lacking. [Unfortunately the very interesting question whether Reiter's disease is caused directly by an intestinal dysentery or is due to an allergic state has not been elucidated, and there is no information relevant to culture or microscopic examination of the faeces. This is particularly unfortunate in this paper since so many cases (nine) commenced with intestinal discharge.]

E. Godtfredsen.

634. Reiter's Disease—Report of a Case Successfully Treated.

J. D. MATIS. *N.Y. State J. Med.*, 47, 1274–1275. June 1, 1947. 8 refs.

A case of Reiter's disease—the triad of symptoms consisting of urethritis, arthritis and conjunctivitis, all of non-specific cause—is described which illustrates its typical course. Penicillin, sulfadiazine, and salicylates were without effect on the painful joints and temperature. The conjunctivitis improved gradually and spontaneously. Fever therapy by intravenous typhoid injections produced a rapid resolution in the general condition.

Stewart Duke-Elder.

635. Penicillin Therapy in Ophthalmia Neonatorum.

A. SORSBY. *Brit. Med. J.*, 2, 332–327. Aug. 30, 1947. 3 refs.

Further experience in the use of penicillin in ophthalmia neonatorum has confirmed the author's earlier opinion that the results obtainable are as great an advance on those of the sulphonamides as were these in turn over the classical methods of treatment. Different methods of administration were tried out at the O.N. unit at White Oak Hospital in an attempt to determine the optimum. (1) 30 cases were treated by instillation of watery drops of commercial penicillin, 2,500 units per ml., at five-minute intervals. The good results reported previously in a series treated similarly were confirmed. (2) 71 cases were treated with the same drops at one-minute intervals for half an hour, subsequently less frequently; 19 cases responded poorly or relapsed. (3) 33 cases were given more concentrated drops, 10,000 units pure penicillin per ml., 6 responded poorly or relapsed; the others took rather longer on the average for clinical cure than with the first two methods. (4) To try to obviate the necessity for frequent applications, vehicles other than water were tried in 51 cases; these vehicles were lamellæ, ointments, oily suspensions, and methyl cellulose. The results were unsatisfactory. (5) 39 cases were treated by massive systemic injections (800,000 units; doses of 200,000 units at 3-hour intervals), followed by topical applications of 10,000 units per ml. drops in 1 per cent. methyl

cellulose. In all the results were good; 5 were cured by the injections alone; the average time for cure was much the same as for methods (1) and (2).

Of the cases which failed to show rapid improvement on penicillin and required sulphonamide therapy, a large proportion showed inclusion bodies; organisms found in the others of these resistant cases were haphazardly distributed among those commonly responsible for O.N., although there were no failures with penicillin in cases due to staphylococcus aureus, streptococcus or the haemophilus conjunctivitis (Koch-Weeks).

Three cases were treated with Marfanil and 4 with Gramicidin S, both used locally; some improvement but no cure was obtained and sulphonamides had to be used.

A total failure of penicillin was observed in no case but the author concludes that the optimum mode of its use remains to be determined.

A. J. B. Goldsmith.

636. Penicillin Treatment of Gonorrhoeal Conjunctivitis.
A. DENES. 9th Scient. Meeting Hungarian Ophthal. Soc. Reported in *Orvosok Lapja* (Hungarian Med. J.), 3, 390. March, 1947.
Case reports.

P. Weinstein.

637. Erythema Multiforme Exudativum. (Erythema Bullosum Malignans—Pluriorificial Type.) Personal Observations of Cases in Willard Parker Hospital for Contagious Diseases (1932-1946).

M. J. COSTELLO. *J. Invest. Derm.*, 8, 127-144. March, 1947. 5 figs. 10 refs.

The author discusses the incidence, clinical appearances, symptoms, complications, laboratory findings, pathology, and treatment of the severe form of erythema multiforme exudativum which affects the skin and mucosæ of orifices. He suggests the title "erythema bullosum malignans" for this disease, because all of the symptoms of the mild type of erythema multiforme are greatly intensified and the prognosis is grave. The disease has been reported under various other descriptive titles from time to time over a great many years, and is probably best known, at any rate in Britain, as the "Stevens-Johnson syndrome".

The author bases his review on 33 cases, the majority of which he observed and treated himself, and reports 17 of the most typical. Fourteen patients were male and 3 female; 7 were children and 10 adults. Three patients died. The necropsy findings in 1 case are fully recorded. Of serious complications, bronchopneumonia occurred in 9 patients, while 1 had uræmia and 4 developed corneal ulcers. The occurrence of the disease in 2 of the cases 10 days after vaccination suggests to the author a possible virus causation. There

were no significant laboratory findings, though a low or normal leucocyte count is suggestive in the diagnosis.

The cutaneous manifestations in all consisted of vesicles of various sizes and flaccid bullæ, on a background of large macular and maculo-papular erythema. Some patients had purpuric lesions and hæmorrhagic bullæ. The palpebral and bulbar conjunctivæ, the lips, oral cavity, and genital mucosa were involved in every case. In addition to the pulmonary involvement commonly encountered, 2 patients vomited blood in the first days of the illness and 2 had tarry stools. Albumin, red cells, leucocytes, and casts were commonly found in the urine. The cutaneous and mucosal lesions lasted on an average for $3\frac{1}{2}$ weeks in 9 patients and from 4 to 7 weeks in 8 patients.

Treatment was symptomatic and included forcing of fluids, blood transfusion, and administration of sedatives. Convalescent scarlet fever serum, concentrated horse serum and normal immune serum were tried in several cases with doubtful benefit. Penicillin was given to 2 extremely ill patients, both of whom, in the author's opinion, would otherwise have died. The most useful local treatment was application of wet compresses of saline, boric acid, or Burow's solution. Sponges with potassium permanganate, 1 in 20,000, helped to control exudation and infection. Sterile "vaselized" gauze was applied to large denuded areas. The eyes were irrigated with normal saline every 3 hours. "Amigen" by mouth was of value.

E. W. Prosser Thomas.

638. Erythema Multiforme with Ocular Involvement (Stevens-Johnson Syndrome). B. STRICKLAND. *St. George's Hosp. Gaz.*, 35, 81-82. May, 1947.

A case of Stevens-Johnson syndrome showing involvement of the conjunctiva, the lips, the buccal mucosa, and the genitalia.

Stewart Duke-Elder.

639. Blepharo-kerato-conjunctivitis cured by Removal of Tonsils and Adenoids. N. ALBU, L. BUZOINU and E. SEPTILICI.

Vide abs. 657.

640. On the Occurrence of Keratoconjunctivitis Sicca in Cases of Rheumatoid Arthritis.

T. STENSTAM. *Acta Med. Scand.*, 127, 130-148. March 22, 1947. 29 refs.

Reference is made to the earlier work of Sjögren on the syndrome of kerato-conjunctivitis sicca with arthritis. The symptoms are smarting pain and a gritty feeling in the eyes, and reduced tear secretion. The conjunctiva stains strongly with bengal rose. Dryness of the nose and pharynx may occur, and 80% of patients also suffer from chronic arthritis. Sjögren regarded the syndrome as a distinct disease.

The author draws his material largely from the rheumatism clinic at Lund Hospital, Sweden. He finds that 10.5% of cases of chronic rheumatoid arthritis have typical keratoconjunctivitis sicca

(referred to as "Kcs"); only 1 case has been found in the acute rheumatic group, and this was of the type which progressed to chronic arthritis. The sex distribution (37% men and 63% women) and the age of onset were the same in Kcs cases as in rheumatoid arthritis without Kcs, and no clinical distinction was found in the arthritis of the two groups. Extensive pathological and biochemical investigations were carried out—Wassermann and tuberculin tests, sedimentation rate determination, sugar-tolerance tests, gastric and liver-function tests—but no difference was found between Kcs cases and other patients with chronic arthritis. Blood cholesterol, calcium and iron, the basal metabolic rate, and the complete blood picture also showed no differences. The author concludes that cases of arthritis with the Kcs syndrome are indistinguishable from other cases of chronic arthritis, and suggests that the Kcs syndrome should be regarded as a symptom of rheumatoid arthritis rather than as a separate disease.

H. F. Turney.

641. Implication of the Conjunctiva in Varicella. (L'atteinte de la conjonctive dans la "varicelle").

M. E. AUBINEAU. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 91-93. Jan.-Feb., 1947.

This extremely rare complication has been seen by the author in three children, one on the bulbar and palpebral conjunctiva, and the other two on the bulbar conjunctiva. The type of the lesion varied in each. In one it was macular, in the second papular, and in the third vesicular. Only in one case—that showing the macular lesion—was there a general conjunctival reaction with discharge.

The author has been able to find only one other such instance in the literature of a conjunctival complication in this disease (HILBERT. *Ann. d'Ocul.*, 129, 122. 1903). Stewart Duke-Elder.

642. Electrometric Variations in the pH of the Tissues in Trachoma. (Variations électrométriques du pH tissulaire dans le trachome.)

P. VANCEA. *Arch. d'Ophthal.*, 7, 156-160. 1947.

After discussing the variations of pH in the nucleus and protoplasm of normal tissue cells, Vancea goes on to describe the use of Brehmer's ionometer to determine the acid-base variations in trachomatous tissue.

He finds the normal conjunctival pH to vary between 7.90 and 8.10 whereas in trachoma the upper fornix region in 16 cases showed an average pH of 7.42, varying from 7.16 to 7.65.

After therapeutic scraping of the trachomatous area, the rise in pH is noticeable often on the second day, and by the tenth day it is approximately normal, even though clinical cure may take many weeks to effect.

[There is no mention made of the pH values in other conjunctival conditions resembling trachoma, so that the possibility of using the ionometer as an aid to differential diagnosis has apparently not been explored.]

L. E. Werner.

643. Observations on Trachoma with Special Reference to a "Carrier State."

M. BODIAN. Brooklyn Ophthal. Soc., meeting Oct. 24, 1946. Reported in *Amer. J. Ophthal.*, 30, 758. June, 1947.

Twenty-two per cent. of natives working at an American Army Base in Fiji had active trachoma. Of these 68% had Prowazek-Halberstaedter inclusion bodies on conjunctival smears. 34% of natives free from trachoma had conjunctival inclusion bodies identical to those found in trachomatous patients. It is felt that this is suggestive of a carrier state in trachoma. American troops living in the area showed no sign of the disease.

A. G. Leigh.

644. Further Research on Pannus Follicularis Trachomatosis.

C. PASCHEFF. *Amer. J. Ophthal.*, 30, 1001-1004. Aug., 1947. 4 figs. 8 refs.

The author reports a case in support of his contention that trachomatous pannus is not always a simple superficial vascularization of the cornea but a "follicular hypertrophy of the corneal conjunctiva."

The case was a severe one and the excised pannus contained numerous typical lymph follicles. An interesting feature of the case was the result of Denig's operation on the right eye in which skin from the lower lid was transplanted to the limbus, and on the left eye in which the transplant was from the buccal mucosa. The right eye did well but the left badly, the transplant becoming the seat of fresh follicles. A further transplant to the left eye, this time of skin, was successful.

The differences between trachomatous and other forms of pannus are discussed.

A. Lister.

645. Aetiology of Trachoma. (In Hungarian.)

G. LUGOSSY. 8th Scient. Meeting Hungarian Ophthal. Soc., Dec. 14, 1946. Reported in *Orvosok Lapja* (Hungarian Med. J.), 3, 389. March, 1947.

A review.

A. Weinstein.

646. Trachoma in Turkey, and Combat Against it. (In Turkish.)

S. GÖRDÜREN. *Ankara Üniversitesi Haftas*, 1, 46-60. 1947.

The author gives a general report on the disease. He states that now in Turkey there are 13 hospitals with beds totalling 130, 27 dispensary and 35 village treatment centres, all specially organized for the treatment of trachoma.

In these centres, during a period of 15 years, 1,300,000 eye patients were examined. Blindness in one eye was 1.1% and in both eyes 0.37%. Blindness from other causes is included in the above figures.

C. Orgen.

647. Penicillin in the Treatment of Trachoma. (Penicylina w lecxeniu jaglicy).

M. WILCZEK. *Sluzbie Zdrowia* (Polish), 1-2, 12-14. Feb., 1947.

After the treatment of 68 cases of trachoma with penicillin given as subconjunctival injections (2,500 units per cc.), drops and ointment, the author claims a diminution of inflammation and secretion in 2-3 weeks and in 4-6 weeks the disappearance of the trachomatous

follicles. The expression of the follicles is said to accelerate recovery. Fresh trachomatous follicles disappear without any trace in 2-3 months with such treatment. The cases of old-established trachoma with scars and pannus require more prolonged treatment lasting 5-7 months. In several cases the author has given up to 25-40 subconjunctival injections of penicillin.

W H Melanowski

648 Primary Tuberculosis of the Conjunctiva.

G M BRUCE and D LOCATCHER-KHORAZO *Arch Ophthalm*, 37, 375-378 March, 1947 3 figs 7 refs

A case of primary tuberculous ulceration of the conjunctiva in a boy is reported, he was seen nine years before the date of the report. The ulceration involved the outer two-thirds of the palpebral conjunctiva of the right upper lid and was associated with adjacent follicular ulceration, there was also marked involvement of the pre-auricular gland.

Laboratory investigation showed a positive reaction to 1:10,000 old tuberculin and acid-fast (Ziehl-Neelsen) bacilli were obtained from the conjunctival scrapings. On culture in egg medium, pure cultures of *Myco tuberculosis* were obtained and scrapings from the ulcer produced typical tuberculous lesions of the bovine type when injected into animals.

Conservative treatment was employed and the ulcer healed in ten weeks, nine years later the eye was free from symptoms. The glandular lesions, however, healed more slowly, and five months after the onset the pre-auricular swelling ruptured spontaneously giving a creamy, greenish-white purulent discharge which was negative for tubercle bacilli. There was no systemic infection.

B W Rycroft.

649 Pemphigus of the Conjunctiva (Pemphigus der Bindehaut)

L GAT *Klin Med*, 2, 155-159 Feb, 1947 1 fig

H L

Description of two typical cases of the affection

650 Large Conjunctival Granuloma due to a Vegetable Foreign Body. (Granuloma congiuntivale gigante da corpo estraneo vegetale)

A BONAZZI *Rass Ital d Ottal*, 16, 131-136 March-April, 1947 3 figs, 7 refs

Report of a case which owing to the extent and uncommon characters of the lesion could be diagnosed only on histological examination

N Pagliarani

651 Streptomycin in the Therapy of Granuloma Inguinale

[R. B GREENBLATT,

H S KUPPERMAN and R B DIENST

Vide abs 588

652. Epithelial Plaque of the Conjunctiva

947

the right bulbar conjunctiva of a male, in diameter was excised and submitted

aged 51 years. The tumor, which was confirmed to pathological confirmation

It is interesting to note that this patient lived in Northern Queensland at a latitude 19° from the equator

J Bruce Hamilton

653 Xeroderma Pigmentosum (Report of Three Cases) I. KATZENELLENBOGEN

Vide abs 738

XVIII. DISEASES OF THE CORNEA

654. Resistance of the Cornea.

A. FUCHS. *Amer. J. Ophthal.*, 30, 721-727. June, 1947. 5 refs.

Having commented on the very great power of resistance to penetration by bacteria of the healthy corneal stroma, the writer quotes cases to illustrate six important groups where penetrating ulceration is a marked feature.

1. Whereas lagophthalmos due to Bell's palsy and injuries of the facial nerve is not usually followed by corneal ulceration, association with debility such as pneumonia, toxæmia or impending death renders penetrating ulceration very common.

2. A case is quoted of a simple entropion in an old woman with hemiplegia who developed a penetrating ulcer owing to rubbing of the cornea by the inturned lashes.

3. Certain ulcers occurring in cases of severe hepatic disease are flat and indolent. The stringy conjunctival secretion, the papery conjunctiva and the occasional appearance of Bitôt's spots suggest vitamin A deficiency, probably by failure to utilize the ingested vitamin.

4. Keratomalacia is considered by the author in many cases to be due to poor utilization of vitamin A in the body rather than a shortage in the food.

5. Grave's disease. A case is quoted where the toxic condition of the patient was probably a potent factor in the necrosis of the corneæ which complicated the severe post-operative exophthalmos.

6. Eczematous conjunctivitis may lead to destructive ulceration in the debilitated.

The author points an analogy between the reopening of post-operative wounds in cachectic or anæmic patients and the occurrence of hernias in times of famine, complications which may be epidemic in incidence. He considers that a fragility of the connective tissue fibrillæ is the underlying cause.

J. E. M. Ayoub.

655. A Pneumococcal Corneal Ulcer Healed in 24 Hours with Penicillin.

C. PARAIPAN. *Amer. J. Ophthal.*, 30, 475-476. April, 1947. 5 refs.

The total dosage of penicillin was 100,000 units given by intramuscular injection, sub-conjunctival injection and as an ointment.

[This case is a good example of the fact that when a case is really responsive to penicillin the effect is almost miraculous.]

A. Lister.

656. Keratitis Superficialis Punctata Epidemica. (Zapalenie powierzchowne rogówki punkcikowate nagminne).

J. SOBANSKI. *Polski Tygodnik Lekarski*, 18, 532-534. May, 1947.

This type of keratitis was described by E. Fuchs in 1889. The last observations of the author in Łódź concern 208 cases of which 161 were bilateral. Among these, 40 cases had the following additional complications:—

In 10, keratitis nummularis; in 2, keratitis disciformis; in 2, dendritic keratitis; in 1, filiform keratitis; in 4, herpes corneae; in 8, catarrhal ulcers; in 5, trachoma, in 2, follicular conjunctivitis; and in 4, dacryocystitis. For the treatment author proposes: 2-3% sol. collargol, adrenaline, sometimes silver nitrate, and in more obstinate cases cibazol or penicillin.

W. H. Melanowski.

657. Blepharo-kerato-conjunctivitis cured by Removal of Tonsils and Adenoids. N. ALBU, L. BUZONU and E. SEPTILICI. *Rev. des Sc. Oto-rhinolary.*, 1-2. Jan.-April, 1947.

A patient, 17 years old, suffering from blepharo-kerato-conjunctivitis showed no improvement from any form of local therapy for a month. Removal of his enlarged tonsils and adenoids effected a cure within 8 days.

N. Blatt.

658. Marginal Corneal Infiltrates and Ulcers.

P. THYGESON. *Trans. Amer. Acad. Ophthal. Otolary.*, 52, 198-209. Jan.-Feb., 1947. 3 tables. 11 refs.

A comprehensive analysis of 200 cases of marginal corneal ulcers; their clinical types, ætiology and treatment are discussed.

Of the three distinct types recognized, *simple catarrhal ulcers* accounted for 90% of the cases; these were normally benign but occasionally led to cicatrization of the central area and irregular astigmatism; they were almost always associated with chronic conjunctivitis, usually due to staphylococci, more rarely the bacilli of Koch-Weeks, Morax-Axenfeld, and others; coincident blepharitis was usual. A few followed acute conjunctivitis, gonococcal arthritis (via presumed secondary gonococcal conjunctivitis) and vernal catarrh.

The prophylaxis and treatment of these is that of controlling the chronic conjunctivitis, and particularly the blepharitis from which the latter probably derived. Atropin he found unnecessary (a much disputed conclusion); penicillin and zinc sulphate respectively for staphylococci and diplobacilli, particularly as ointment against the primary blepharitis; and where, as commonly occurred, there was a mixed infection, sulphathiazole ointment (5%) was the only uniformly effective agent; where the staphylococci were lodged in the Meibomian glands and ineradicable by surface applications, staphylococcal toxoid (half-yearly boosts of $\frac{1}{2}$ c.c.) prevented recurrences (in the discussion that followed, treatment with anti-toxin was advised until the ulcer healed, before any active immunization with toxoid). Topical application to the ulcer was found undesirable, and evidence is offered that the staphylococcal toxin alone reaches the cornea, in contrast to pneumococcal conjunctivitis in which ulceration of the cornea almost never occurs, the pneumococcus having no comparable exotoxin.

Second agent in frequency as a cause of catarrhal ulcers was the Morax-Axenfeld diplobacillus, having a curiously patchy geographical distribution on America; its recent virtual disappearance

from England and Western Europe was later noted. Two catarrhal ulcers were associated with vernal catarrh, although the latter typically affects the central cornea, and a further allergic case was due to pontocaine. These three were in numerical contrast with the copious allergic affections of the conjunctiva; bacterial allergy was regarded as a frequent cause in view of the occurrence of ulcers late in the disease and relatively late in life.

The second group contained 14 cases of *ring ulcers and infiltrates*. With two exceptions (coalescing ulcers from staphylococcal conjunctivitis) they were of endogenous origin, occurring in association with gonococcal arthritis, bacillary dysentery, influenza, periarteritis nodosa and lupus erythematosus. Systemic treatment was consequently required, and cauterization served only to aggravate.

There were finally six examples of *chronic serpiginous (Mooren's) ulcer*, all typical in clinical appearance and course; in these there was neither associated conjunctivitis nor systemic infection, no significant micro-organisms, and animal inoculation experiments were negative. In the treatment of these, sulphathiazole and penicillin were ineffective; delimiting keratotomy and repeated paracenteses were apparently successful in arresting three cases, but the others readily jumped the keratotomy incision.

There was throughout no evidence that riboflavin deficiency was an ætiological factor, or that its exhibition was curative.

In only nine cases was acne rosacea present, but the ulcers were believed secondary to coincident staphylococcal infection. Phlyctenular keratitis was excluded, but in the absence of conjunctival phlyctens, diagnosis was difficult, and some may have been unwittingly admitted.

P. D. Trevor-Roper.

659. A Case of Corneal Ulcer Treated with Penicillin Solution.

R. R. CHASE. *Rhode Island Med. J.*, 30, 187. 1947.

Case report.

Stewart Duke-Elder.

660. Antitoxin Treatment of Staphylococcal Corneal Ulceration.

J. H. ALLEN. *Amer. J. Ophthalm.*, 30, 987-992. Aug., 1947. 3 tables. 4 figs. 2 refs.

Corneal complications of staphylococcal blepharo-conjunctivitis take two forms: (a) superficial punctate keratitis and/or (b) marginal ulceration. Since these lesions can be produced experimentally by the local use of staphylococcal toxin it seemed logical to the author to employ the antitoxin in their treatment. This was done in a series of 25 cases, all with marginal ulceration in at least one eye secondary to blepharoconjunctivitis of proved staphylococcal origin. 10,000 units of the antitoxin were given daily for 4 days in 22 cases and for longer in 3. Improvement was noticeable in 48 hours and subsequently continued slowly in some cases, rapidly in

others, the ulcers healing in from 3 to 7 days. Associated conditions—sycosis vulgaris and acne pustules regressed simultaneously.

After the ulcers had healed active immunization was begun with staphylococcal toxoid. Mild relapses occurred as a result in 2 cases and a severe relapse in one of them.

The author advocates the use of the antitoxin as a temporary measure in the acute stage of the keratitis until active immunization, chemotherapy or antibiotic therapy can become effective.

A. Lister.

661. Herpes Zoster appearing after Trauma.

J. V. KLAUDER. *J. Amer. Med. Assoc.*, 134, 245-248. May 17, 1947. 27 refs.

After a review of the literature on herpes zoster following trauma, 8 cases are briefly described. The affected area was the trigeminal in 5 cases (with corneal involvement in 2), the chest in 2, and the arm in the remaining 1. In 3 cases there was slight trauma to the skin without laceration; in 1 slight laceration had occurred; 2 followed injury to an eye and one removal of a wart by electrodesiccation. The interval between trauma and the appearance of herpes zoster was one day in 1 case, three days in 3 cases and 2, 7, 9 and 14 days respectively in the remaining cases. The possibility that the trauma activated a latent virus is discussed. The incubation period of spontaneous herpes zoster is not known; from experimental evidence and clinical observations (herpes zoster occurring after exposure to chicken pox) the incubation period seems to vary between a few days and about a fortnight. From the author's observations and the literature on herpes zoster after trauma it is concluded that if herpes zoster appears at an interval of from 1 day to 3 weeks after an injury and at the site of the injury, the trauma may reasonably be considered as an ætiological factor. This relation is of importance from the point of view of the Workmen's Compensation Act.

A. Schott.

662. Herpes Zoster.

J. G. M. HAMILTON. *Practitioner*, 159, 122-127. Aug., 1947.

A good text-book account of the disease for the general practitioner, including a brief description of ophthalmic zoster with its treatment.

P. D. Trevor-Roper.

663. Significance of the Sulphydryl Group in the Regeneration of the Cornea. (Therapeutic Experiments with Glutathione Ointment.) (In Hungarian.)

ST. DE GROSZ. *Orvosok Lapja* (Hungarian Med. J.), 3, 39-40. Jan., 1947.

Erosions of the cornea in torpid cases of herpes corneæ heal well with treatment by an ointment containing a reduced glutathione compound. The author considers that the result is due to mitotic stimulation by the sulphydryl grouping and not to any bactericidal affect.

P. Weinstein.

664. Neurotrophic Keratitis following Alcohol Injection into the Gasserian Ganglion. E. SINAI. Tel-Aviv Branch, Palestine Jewish Med. Assoc., Oct., 1946. Reported in *Harefuah*, 32, 16-17. Jan., 1947.

Heavy desquamation of corneal epithelium accompanied by deep exudate. Tar-sorrhaphy with a good result.

Mitterstein.

665. A Case of Interstitial Keratitis after Gluteal Abscess.

F. SJÖNTOFT. *Acta Ophthalm.* (Copenhagen), 25, 73-80. July, 1947. 8 refs.

A female 30 years of age, with a slight bilateral acute iridocyclitis was treated with two injections of milk (6 and 7 cc.). A gluteal abscess resulted (hæmolytic streptococci), and later, in spite of an adequate incision and penicillin treatment, a severe septicæmia developed complicated by pulmonary embolism and myocarditis of about 3 month's duration. Recovery eventually ensued. About a fortnight after the injection of milk a progressive parenchymatous keratitis was observed, first in the right eye but later also in the left, localised to the central areas of the cornea. Multiple interstitial infiltrations were observed together with an arched infiltration upwards. The corneal disease improved slightly in the course of about two months, when some transient fresh infiltrations were observed in the left eye and a sclero-keratitis developed temporally. A similar affection but less pronounced was found also in the right eye. There was complete recovery without impairment of visual acuity at the end of the period of observation (3 months after onset of the gluteal abscess).

E. Godtfredsen.

666. The Treatment of Interstitial Keratitis by Subconjunctival Implantation of Preserved Placenta. (In Rumanian.)

O. SICORSCHI IONESCU. *Spitalul* (Bucharest), 3-4. March-April, 1947.

Following Filatov's technique, the author uses placenta kept for 5-9 days at a temperature of 2-4° C., implanting it at the site of infiltration (*vide* Abs. 356). In the 17 cases of syphilitic interstitial keratitis so treated, the therapy is said to have resulted in a shortening of the disease and a quicker clearing of the cornea.

N. Blatt.

667. Contributions to the Technic of Corneal Grafting.

H. M. KATZIN. *Arch. Ophthalm.*, 37, 379-382. March, 1947. 5 figs.

Katzin presents clinical notes on his work at the Corneal Research Laboratory in connection with the technique of keratoplasty.

For cutting the graft the author prefers the Green's automatic spring-driven trephine which cuts the graft cleanly and bevels it as it cuts to about 15 degrees: by means of a protecting shoulder the anterior chamber remains intact until the trephine is withdrawn. At one time a fibrin cushion was used in the anterior chamber for protection, but this has now been discontinued. For fixation of the graft a single suture is preferred, outlining three equilateral triangles with a common apex at the centre: the knot is tied at the base of one triangle where the first suture enters and the last emerges.

The importance of having the globe free from any external pressure during keratoplasty is appreciated and a suture speculum is cut from thin aluminium. This takes the form of a mask with a cut-out for the eyes and nose, placed over the towel; the outer edge of the mask is notched to guide the lid sutures which are clamped with mosquito forceps just below the edge of the mask.

If the graft has been incompletely excised by the automatic trephine, specially curved scissors are employed which have blunt tips bent on a 5 mm. diameter curve so that the blade follows the outline of the graft.

For preservation of the donor eye a moist chamber has been devised. This is a small glass cylinder which contains 10 c.c. of sterile isotonic solution of sodium chloride in order to produce water vapour. The donor eye can be kept in this bottle in the refrigerator at 3°C. for about three days.

B. W. Rycroft.

668. Cure of Blindness by Keratoplasty After Forty-Two Years. (Ciego durante cuarenta y dos años curado por la queratoplastia.)

A. T. ESTRADA. *Bol. del Hosp. Oftal. Ntra. Sra. de la Luz*, 3, 245-248. Jan.-Feb., 1947. 1 fig.

A case history is presented of a 54-year-old male who developed lagophthalmos in both eyes as a complication of exanthematous typhus. The final result was total loss of vision in the right eye due to corneal staphyloma, whilst with the left eye the patient was only able to distinguish light, colours and very large objects, so that he could hardly get about alone. The following year an optical iridectomy was performed in the left eye at 12 o'clock. The right eye increased in volume because of the staphyloma and attacks of inflammation were frequent. Finally this eye was enucleated. The left eye upon examination showed an extensive central leukoma adherent at the lower end, square shaped and surrounded by a transparent zone through which the iris could be seen. Keratoplasty, using Castroviejo's technique was performed and after 15 days the dressings were removed. The post-operative period was satisfactory. Final visual results were 0.9 for distance and Jaeger 1 for near.

Moacyr Alvaro.

669. Perforating Corneal Grafts in the Child and Adolescent. (Les greffes transfixiantes de cornée chez l'enfant et l'adolescent.)

G. E. JAYLE. *Arch. d'Ophthalm.*, 7, 148-155. 1947.

In this article the technique of the operation which the author prefers is described.

He uses Franceschetti's trephines and considers that a margin of 0.1 mm. in diameter in excess is permissible either in graft or in recipient hole.

Filatov's protector, or Nicetic's knife is not used to avoid damage to the lens, as he finds any such device unnecessary and somewhat damaging to the cornea of the recipient.

On account of the frequency of post-operative hypertension which must impair the nutrition of the implant, he now advocates a preliminary trephine operation, as does Paufigue, and finds no inconvenience arising from this procedure.

Two operative cases are described in detail, and the author notes that no abnormality in development occurred in a child aged eleven when seen three years later.

L. E. Werner.

670. Surgical Technique of Corneal Transplantation in Rabbits.

F. C. STANSBURY and J. A. C. WADSWORTH. *Amer. J. Ophthalm.*, 30, 968-978. Aug., 1947. 6 figs. 19 refs.

The paper is intended primarily for those who wish to perfect their skill in this operation on experimental animals. It describes in detail the procedure and special problems of keratoplasty in rabbits, following in general the technique of Castroviejo. While the problems discussed, such as anaesthesia and post-operative treatment, are peculiar to animal surgery, such details as the cutting of the graft and the laying of the fixation suture apply also, of course, to the human subject. The paper is too detailed to be adequately abstracted.

A. Lister.

671. Corneal Graft. (La keratoplastie.)

G. RENARD and P. BREGEAT. *La Médecine*, No. 7, 6-14. July, 1947.

A good study of the present status of corneal grafting.

S. Vallon.

672. Complete Corneal Grafts. (Les greffes totales de cornée).

LEGRAND. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 106-115. Jan.-Feb., 1947.

Report of six cases with a description of the author's technique. A general article.
Stewart Duke-Elder.

XX. DISEASES OF THE SCLERA

673. Scleral Necrosis in a Case of Periarteritis Nodosa.

F. HARBERT and S. D. MCPHERSON. *Amer. J. Ophthalm.*, 30, 727-732. June, 1947. 6 figs. 11 refs.

Two years previous to admission, the patient, a man of 31, had had acute otitis media and an abscess of the nasal septum with staphylococcus aureus in blood culture. He was treated with sulphonamides, developed an allergic reaction, but recovered. One year previously he was found to have an interlobar collection of fluid in the right chest and a chronic dacryocystitis. Following dacryocystectomy he developed spontaneous subconjunctival ecchymoses at the sites of which ulcerations and scleral necroses developed. After three weeks, during which penicillin conjunctivally and systemically, and streptomycin were given, he developed paræsthesia of the hands and hæmaturia. Albuminuria and 8-10% eosinophilia were found.

Biopsy of the gastrocnemius revealed lesions of periarteritis nodosa.

In the eighth week, the corneo-scleral lesions which had been improving, relapsed and endophthalmitis was detected at the end

of the eleventh week. Suppurative lesions in the ankle and wrist, intradermal nodules in the feet and legs, and shallow ulcers of the mouth now appeared. As he was sensitive to staphylococcus toxin desensitization was tried but without success, and the patient left the hospital at his own request.

J. E. M. Ayoub.

XXI. DISEASES OF THE UVEAL TRACT

674. Acute Iritis and Allergy. (Iritis aiguë et allergie.)

P. LEMOINE. *Arch. d'Ophthal.*, 7, 161-166. 1947. 9 refs.

As the ocular condition in iritis is rarely indicative of the source or nature of the primary focus of infection, Lemoine has experimented in treating it as a purely symptomatic allergy.

He discusses three theories as to the possible cause of allergic reactions, and favours the theory of Lumière who found that magnesium hyposulphite by injection attenuated, if it did not abolish allergic reactions in the body.

He finds that cases of acute iritis treated locally with atropine and systemically with an intravenous injection of 10 cc. of 10% magnesium hyposulphite, at first daily for 5 or 6 days and afterwards spaced according to progress of the case, will resolve much more readily than by treatment along other lines. Pain and photophobia diminish more rapidly, and by the fifth day the condition is as a rule well on the way to recovery.

Three case histories are given. In one of them iritic attacks had always been of long duration on previous occasions before hyposulphite treatment had been attempted; a subsequent attack, which was treated along ordinary lines, was not improved until the intravenous injections were recommenced.

The author makes no exaggerated claims for this therapy, and emphasizes that it is purely a treatment of the ocular condition, and that only investigation for, and elimination of the source of the trouble will prevent recurrent attacks, but he puts in a plea that his method be given widespread trial and its value tested in a sufficient number of cases to enable a sound assessment to be made.

L. E. Werner.

675. The Treatment of Malignant Melanoma—Report of 862 Cases. G. T. PACK, S. L. PERZIK and I. M. SCHARNAGEL. *California Med.*, 66, 283-287. May, 1947. 4 charts. 5 figs. 4 refs.

The authors present an analysis of 862 cases of malignant melanoma of which 595 were available for five-year end-result study. Of these 8.6% occurred in the eye. In the whole series radiation therapy alone in all its forms and combinations yielded no five-year survivals. Surgical attack resulted in 38.4% three-year and 17.7% five-year survivals for localized melanomas. In the whole series the evidence

showed a greater saving of life by widening the scope of radical surgical attack. The ideal treatment is the *en masse* excision of the primary lesion with its entire lymphatic drainage basin and the dissection of the regional nodes, "in continuity".

Stewart Duke-Elder.

676. A Case of Bilateral Genuine Iris-atrophy.

I. CYUKRASZ. *Brit. J. Ophthalm.*, 31, 176-179. March, 1947. 2 figs. 6 refs.

A woman aged 24 years had intolerable headache, defective vision in the right eye, and a blind left eye. The right eye showed an eccentric pupil and a large gap in the iris, extending to the angle of the anterior chamber, on the temporal side. There were secondary glaucoma and deep excavation of the disc. In the left eye there was a congenital coloboma of the iris above, but this was not continued into ciliary body or choroid. Two holes were seen in the root of the iris, the larger of which was spanned by a stout bundle of iris trabeculae. The atrophic disc showed deep glaucomatous excavation. The condition was relieved by the operation of cyclodialysis.

In a previous case the author observed a bilateral iris atrophy which progressed to total aniridia.

L. H. Savin

677. Metastatic Choroiditis cured by Penicillin. (Un cas de choréïdite métastique guérie par la pénicilline).

A. GAUTHIER. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 20-21. Jan.-Feb., 1947.

Report of a case occurring in septicæmia treated by systemic penicillin.

Stewart Duke-Elder.

678. Sarcoma of the Ciliary Body complicated by Iridocyclitis. (Sarcome du corps ciliaire révélé par une irido-cyclite).

P. HERMANN. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 65-68. Jan.-Feb., 1947.

A report of a case.

Stewart Duke-Elder.

679. Two Observations of Central Serous Choroiditis. (Deux observations de choréïdite séreuse centrale).

G. SOURDILLE. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 88-90. Jan.-Feb., 1947. 2 figs.

Reports of two cases.

Stewart Duke-Elder.

680. Traumatic Heterochromia Iridis in a Seeing Eye after Iridodialysis. W. DILTHEY.

Vide abs. 627.

681. Pseudo-tumour of the Posterior Pole. G. OFFRET, P. HERMANN and F. HERVOUET.

Vide abs. 767.

682. A Case of Degeneration of the Macula Lutea caused by Central Choroiditis.

K. VAN WALBECK.

Vide abs. 692.

XXII. DISEASES OF THE RETINA

683. The Fundus in Hypertensive Patients Operated upon by the Smithwick Method. (El fondo del ojo en los hipertensos operados por el procedimiento de Smithwick.)

M. P. SOLANES. *Gaceta Medica de Mexico*, 77, 16-22. Feb., 1947. 8 refs.

The author of this article reaches the following conclusions:

(1) During the first few weeks following the Smithwick operation on hypertensive patients an increase in the narrowing of the retinal arterioles which accentuates the "edematous" papillo-retinal lesions is observed.

(2) It was proved that within a few months the angiospasm (localized constrictions) and the "edematous" lesions disappeared,

the tonic contraction (generalized uniform narrowing) of the arterioles remaining. These, according to investigators who have followed up the cases for years after operation, also tend to disappear in time.

(3) The retinal vascular alterations in those operated upon are independent of the effect produced by the operation on the arterial tension and the general health of the patient.

(4) It is supposed that similar alterations occur in other circulatory regions of the organism, especially in the brain.

Moacyr Alvaro.

684. A Sign of Severity in Toxic Comas : Retinal Hypotension. (Un symptôme de gravité des comas toxiques : l'hypotension artérielle rétinienne.)

CH. THOMAS and CH. HENRI. *Conc. Méd.*, No. 28, 1114-1115. June 28, 1947.

In 22 cases of coma of varied origin, the authors measured the retinal blood pressure, and from their observations they conclude that when there is a relative low retinal arterial pressure, even when deglutition movements are present, the patient would die.

S. Vallon.

685. Inorganic Obliteration of the Arteries. (L'oblitération inorganique des artères.)

P. BAILLIART. *Ann. d'Ocul.*, 180, 238-241. April, 1947.

The author discusses the aetiology of the condition. He cites 3 types of cases, all occurring in young patients, mainly female, with no discoverable general cause. :—(1) Temporary veiling or blackout, which may be repeated and which may or may not be accompanied by migrainous symptoms. (2) Similar to the above, but some visual trouble persists, and there remains a small scotoma, ophthalmoscopic examination revealing a patch of œdema along the course of a slightly narrowed artery. (3) Almost complete and persistent blindness presenting the typical picture of blockage of the central retinal artery.

These are all differing degrees of the same vascular condition. Some may be due to arteriolar spasm, but he holds that others are due to a failure of the tone of the vessel walls, since in vessels of the calibre of the central retinal artery the blood is propelled along the vessel by the tone of the vessel walls. If this fails, the blood-stream will be arrested, resulting in partial or complete retinal syncope.

He suggests that this failure may be due to some endocrine imbalance, and that other signs pointing to this may be found if looked for. Treatment, immediate and long-term, is discussed.

R. W. Stephenson.

686. Intramural Vessels in the Retina (Vasa Vasorum).

A. LOEWENSTEIN. *Nature*, 160, 124. 1947.

The existence and course of intramural vessels is described in retinal arteries and veins in man and some animals. They have not been observed in young healthy human beings, and are considered as an attempt at healing in unhealthy vessels.

British Abstracts.

687. **Fundus Oculi as an Indicator of Vascular Damage in Diabetes Mellitus.** H. DOLGER. N.Y. Acad. Med., Section of Ophthal. Reported in *Arch. Ophthalm.*, 37, 695-696. May, 1947.

Since the discovery of insulin the incidence of degenerative changes in diabetic patients has increased. Retinopathy is found in 76% of patients under 30 who have had diabetes for more than 10 years. The duration of the diabetes is more important than the age of the patient, and the earliest clinical manifestations of vascular damage are found in the eye. The discussion which followed this paper indicated that diabetic retinopathy is not a vitamin deficiency but is a fundamental change of the intracellular oxidative enzyme systems.

A. G. Cross.

688. **Ocular Disturbances in Methyl Alcohol Intoxication. Some New Cases.** (Les accidents oculaires de l'intoxication par l'alcool méthylique. A propos de cas récents.)

F. P. CALHOUN, CH. THOMAS, CORDIER and ROHR. *Rev. Méd. Nancy*, 72, 17-20. Jan. 1-15, 1947.

The authors had the opportunity of studying 16 cases of ocular disturbances after intoxication with methyl alcohol. They saw 11 cases of total blindness; 7 of them died, in 4 the vision recovered more or less completely. The other 5 cases were mild and recovered. In all cases, they found either a central scotoma or hemianopsia of various types frequently binasal, never homonymous. The disc was oedematous and red. Pathological examinations revealed retinal lesions which may explain the alterations in the visual fields.

S. Vallon.

689. **Sectoral Softening of the Retina with Detachment.** (Ramollissement de la rétine en secteurs et décollement.)

P. DOUCET. *Arch. d'Ophthal.*, 7, 167-170. 1947. 1 fig.

Where an arteritis, usually either tubercular or syphilitic, has occurred it is not uncommon to find that the sector of the retina supplied by the affected branch has become degenerate and partly detached, sometimes showing multiple small holes and sometimes large solitary holes. The vitreous in the corresponding region contains numerous floccules, presumably particles of softened degenerated retina.

In dealing with such cases by operation the author claims that it is necessary to cover the whole area of distribution of the diseased vessels; alternatively recurrences are liable to occur.

L. E. Werner.

690. **A Case of Bilateral Non-attachment of the Retina.**

L. WADENSTEN. *Acta Ophthalm.* (Copenhagen), 25, 61-71. July, 1947. 3 figs. 15 refs.

The author reports a case of congenital bilateral detached retina in a girl aged 7 months. The child was blind and presented practically identical signs in both eyes. There was no sign of inflammation. Each globe was microphthalmic with a very shallow anterior chamber and a protruding iris-lens diaphragm. Just behind the

clear lens there was found a white membrane with a suggestion of retinal vessels. There was no shadow by diascleral transillumination, and the intra-ocular tension was normal. The right eye was enucleated. Histopathological examination showed a total detachment of the retina without any signs of intrabulbar inflammation. In his brief discussion on the case the author proposes the term "non-attached retina" as an antithesis to "detached retina" on account of the embryological conditions.

E. Godtfredsen.

691. Surgical Cure of Retinal Detachment with Macular Hole.
(Guérison chirurgicale d'un décollement rétinien par perforation maculaire.)

DOUCET. *Arch. d'Ophthalm.*, 7, 284-286. 1947. 5 refs.

Details of operative treatment of a case by single diathermic puncture, with resultant reposition of the retina. Different methods of approach and diathermy technique are discussed.

R. W. Stephenson.

692. A Case of Degeneration of the Macula Lutea caused by Central Choroiditis.

K. VAN WALBECK. *Acta Ophthalm.* (Copenhagen), 25, 37-45. July, 1947. 5 figs. 4 refs.

Report of a case (female, 70 years of age) observed for 30 years. The disease started in the left eye as a central choroiditis with permanent impairment of visual acuity. Five years later a sudden failure of vision of right eye was presumably caused by a subretinal hæmorrhage in the central area; 15 years later the right eye was removed because of a severe secondary glaucoma. In addition, the patient suffered from diabetes mellitus and acidosis (renal calculi). Histopathological examination (given in detail with micro-photographs) showed a proliferative or disciform degeneration at the macula.

Information on diascleral transillumination and on the state of the retinal vessels is lacking, both of which would be of great value in a case-report of this type.

The author's hypothesis that choroiditis is the cause of the macular degeneration based on analogous conclusions from the disease of the left eye has not been proved and seems questionable. [In his rather brief comment on the case, the author does not mention the comprehensive work by Stig Holm (Macular proliferation, *Acta Ophthalm.*, Suppl. 19, 1941) where similar cases are described in detail.]

E. Godtfredsen

693. Hypothyroidism with Macular Abiotrophy and Inner Ear Deafness.

L. RAU. *Proc. Roy. Soc. Med.*, 40, 468-469. June, 1947.

The patient, aged 38, showed in his right eye a central lesion resembling that seen in familial macular abiotrophy (Best's Disease); his left eye was amblyopic. There

was no family history and no consanguinity of the parents. He was treated with thyroid extract by mouth. Two years later the "macular retinitis" had absorbed leaving him with perfect vision, a gratifying outcome which had persisted to the present (for four years). *A. J. B. Goldsmith.*

694. A Rare Eye Complication after Sepsis. (Eine seltene Augenkomplikation nach Sepsis.)

H. KREITNER. *Wien. med. Wchnschr.*, 50, 177-178. April, 1947. 1 fig.

A traumatic lesion of the forehead and both wrists which subsequently suppurated. On the 8th day after the trauma the right eye lost all vision within an hour due to metastatic ophthalmitis with hypopyon and exudate in the vitreous. Enucleation had to be performed. The organism was a hæmolytic streptococcus. *H.L.*

695. Waren Tay-Sachs Disease in a Chinese Infant. G. HARIDAS.

Vide abs. 819.

XXIII. DISEASES OF THE OPTIC NERVE

696. Optic Atrophy caused by a Pentavalent Arsenical. (Atrophie optique par un arsenic pentavalent).

P. PESME. *Bull. de la Soc. d'Ophtal. de Paris*, No. 1, 99-102. Jan-Feb., 1947.

The case of a man of 50 years, of good physical condition, treated by acetylarsan. The author points out that the pentavalent arsenicals are more neurotropic than the trivalent—a fact which accounts for their therapeutic superiority and also the danger in their use. He believes the optic atrophy to be due to direct chemical action on the nerve fibres. *Stewart Duke-Elder.*

697. Epidemic Retrobulbar Neuritis in the Philippines during the Japanese Occupation.

G. DE OCAMPO, C. V. CARLOS, V. YAMBAO, P. J. MAÑAGAS and C. L. SEVILLA.

Vide abs. 859.

698. A Neuro-vascular Syndrome Related to Vitamin Deficiency.

H. SMITSKAMP. *Thesis*, University of Amsterdam. Sept., 1947.

Chapter VII of this thesis describes some observations of the Dutch ophthalmologist Schwarz who examined a number of patients with "camp-eyes" in a P.O.W. camp at Bandoeng (Java) during the Japanese occupation. No new facts are mentioned. *J. ten Doesschate.*

699. A Contribution to our Knowledge of Nutritional Amblyopia or "Camp Eye".

H. G. MOORREES.

Vide abs. 858.

700. Deficiency Symptoms in Prisoners of War. J. F. DE WIJN.

Vide abs. 860.

701. Three Cases of Pigmentation of the Disc. (Trois cas de pigmentation de la papille.)

G. RENARD. *Bull. de la Soc. d'Ophtal. de Paris*, No. 1, 40-48. Jan.-Feb., 1947. 3 figs. 36 refs.

Clinical descriptions and illustrations of three cases of pigmentation of the optic disc are presented in detail. The diagnosis is discussed clinically and ætiologically. *W. J. B. Riddell.*

702. Tumours of the Optic Nerve. Observation on Two Cases. (Los tumores del nervio optico. Consideraciones acitea de dos casos.)

M. SORIA and J. CANORAS. *Rev. Espan. Oto-Neuro-Oftal. y Neurocir.*, 28, 422-431. 17 figs.

The authors describe 2 cases of glioma of the optic nerve. In the first case (a girl) the family noticed that the left eye was becoming

proptosed at the age of 5 years. When aged 12 she was brought for treatment with pain, lacrimation and inflammation in the eye. On examination the eye was found to be displaced downwards and outwards with limitation of upward movement. The left pupil was dilated and fixed; the left disc was white with some dilatation of the veins; the eye was blind and the corneal sensitivity diminished. X-rays revealed an increase in height and depth of the left orbital cavity. The tumour—a glioma—was removed with the optic nerve to which it was attached by a Krönlein incision. Convalescence was uneventful, and no complications have arisen after an interval of nine years.

The second case was a male aged 20, who 3 years previously had noticed visual failure while his family remarked that the lids of his eye did not shut at night when he slept. During the last year increasing proptosis had been noted. On examination the left eye was found to be displaced downwards and outwards with a proptosis of 8 mm. Upward movements were limited. The pupils were equal but reacted sluggishly to light, the left disc was atrophic and vision was reduced to perception of light. X-rays showed a marked difference in the configuration of the 2 optic canals. The tumour was removed by superior orbitotomy; it was adherent to the outer coat of the eye and was fixed at the apex of the orbit. A few days after operation neuro-paralytic keratitis developed which healed leaving an opacity. Complete ophthalmoplegia was present as well as a hypo-aesthesia of the region supplied by the ophthalmic nerve and a slight diminution of smell on the left side and 18 months later the patient had no further symptoms. Biopsy again revealed the presence of a glioma of the optic nerve.

The authors consider that gliomata generally appear before the age of twenty and meningiomata after this age. They discuss the clinical history of these tumours in detail.

X-ray treatment has little effect on these tumours, the only effective treatment for which is operation. The merits of the different techniques of operative approach are discussed. *E. E. Cass.*

703. Alveolar Meningioma of the Sheath of the Optic Nerve. (Meningioma alveolare della guaina del nervo ottico.)
G. F. CASARI. *Rass. Ital. d'Ottal.*, 16, 137-147, March-April, 1947. 4 figs. 24 refs.
Report of a case with a review of the classification of neoplasms of the optic nerve. *N. Pagliarini.*

XXIV. DISEASES OF THE LENS

704. Modern Conceptions on Anomalies of the Crystalline Lens and its Vascular Tunic in the Newborn.
J. HOROWITZ AND E. SCHIFF. *Acta Med. Orient.*, 6, 126-131. April, 1947.

The authors report a case of fibroplasia lentis in a newborn. They briefly review the congenital malformations of the lens, the

rôle played by German measles attacking the expectant mother in the first months of childbearing and, especially, Terry's syndrome which is characterized by the appearance of embryonic connective tissue in the vascular tunic of the lens.

The reported case, a first-born premature male of 7 months, suffered in the first days of his life from a feverish condition which was controlled by penicillin. At the age of 4 months an opacity appeared behind the lens in the right eye and was diagnosed as Terry's fibroplasia. Glioma, usually suspected in such cases, was easily excluded by the presence of other symptoms of congenital malformations, such as microphthalmos, microcornea and a very shallow anterior chamber. Transillumination and pupillary response to light were normal. In all cases of suspected retinoblastoma roentgenograms should be taken as they may reveal characteristic calcium deposits.

Slight differences in size seemed to be of great diagnostic value in favour of congenital anomaly rather than glioma. A small cornea is a cardinal point, and in the present case, in the affected eye the cornea was 9 mm. in diameter as compared with 11 mm. in the unaffected eye.

Mitterstein.

705. Familial Cataract with Extensive Pedigree Chart.

I. L. JOHNSTONE. *Brit. J. Ophthalm.*, 31, 385-395. July, 1947. 7 figs. 1 table. 11 refs.

A new genealogy of familial cataract is reported, its slit lamp appearances described and its relation with other forms of cataract discussed. The affected stock is that of the Elwells, two branches of which form the subject of the article. Of the 131 persons in the genealogy, 40 were affected.

The cataract is familial but not congenital, appearing at any time from 6-50 years of age and it is inherited as a Mendelian dominant characteristic without sex discrimination.

Its distinctive features are: (a) It is pre-senile. (b) Its position is primarily posterior and subcapsular. (c) Its configuration is that of leaf- or feather-like branches radiating from the centre, and flakes or dots in white, yellow, green or blue throughout the cortex, but leaving the anterior zone of disjunction clear. (d) Accentuation of the shagreen of the anterior capsule. Before there are any ophthalmoscopic signs the posterior cortex has a whitish reflex.

One unaffected member developed a fundus abnormality resembling Doyme's honeycomb choroiditis. Two children developed maculo-cerebral degeneration. Otherwise the family is all of healthy stock free from physical and developmental affects; no consanguinity was discovered; nothing significant was found in the blood chemistry.

Among the other cataract genealogies discussed, most of them differ more or less from the one described. In comparison with other forms of cataract its appearances resemble most closely those found in dystrophia myotonica, but there is no suggestion of muscular dystrophy or endocrine disorder in the family.

The author aptly compares the cataract to an inherited characteristic such as a distinctive nose. The baby has the nose of a baby, but develops the nose of his father as he grows up.

[One of the illustrations suggests that the early ophthalmoscopic appearance closely resembles that of senile cuneiform cataract. This interesting article suggests that the genealogy of a number of pre-senile and blue dot cataracts might repay investigation.]

A. Lister.

706. Further Observations on Dental Defects in Infants Subsequent to Maternal Rubella during Pregnancy.

M. W. EVANS. *Med. J. Australia*, 1, 780-784. 1947.

Of 67 children whose mothers suffered from German measles during pregnancy, 46 exhibited dental abnormalities including caries and restricted arch formation. Of these 24 were deaf mutes and one had cataract. A twenty-fifth case showed both deaf mutism and cataract.

British Abstracts.

707. I. Dec. 14, 1946. Reported in *E. GALI, Orvasak* 17.

With and other symptoms usually ascribed to lability of the vegetative nervous system: tenesmus, menorrhagia, and hypotony. He considers the condition to be due to B-avitaminosis.

P. Weinstein.

708. Cataracta Complicata: Myopia.

E. R. ROLING. Chicago Ophthal. Soc., meeting April 15, 1946. Reported in *Amer. J. Ophthal.*, 30, 762-763. June, 1947.

Case report. A woman aged fifty, a myope, had been blind in the right eye for 45 years following an injury w right eye showed a mature cataract suggestive of cataracta complic although not so marked as in vision on correction was 20/25. than that of the left eye.

A. G. Leigh.

709. A Simplified Method of Vacuum Extraction for Senile Cataract. (Simplificacion del procedimiento del vacio para la extraccion de la catarata senil).

J. PEREZ LLORCA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 384-389. April, 1947. 3 figs. The author describes his apparatus for extraction of cataract by suction, by the use of which he has had success in 80% of cases.

E. E. Cass.

710. Some Details of Intracapsular Cataract Extraction. (Quelques details sur l'extraction intracapsulaire de la cataracte.)

C. DUVERGER and P. BREGEAT. *Arch. d'Ophthal.*, 7, 379-389. 1947. 6 figs. A description of operative technique in which, as the authors say, there is nothing new.

R. W. Stephenson.

711. Severe Late Infection after Cataract Extraction. (Infection tardive grave après opération de cataracte).

DETROY and LESENNE. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 14-16. Jan.-Feb., 1947.

A case is described and the author discusses whether the origin of the infection is exogenous or endogenous. *Stewart Duke-Elder.*

712. Intra-ocular Hæmorrhage in Cataract Extraction.

W. C. OWENS and W. F. HUGHES. *Arch. Ophthalm.*, 37, 561-571. May, 1947. 3 charts. 15 tables. 30 refs.

2,086 extractions of uncomplicated senile cataract have been analysed statistically by the authors in regard to: 1, factors in the patients' physical condition; 2, the possibility of altering these factors, and 3, the effect of hæmorrhage on post-operative course and final visual results.

1. *Post-operative hæmorrhage into the anterior chamber.* This occurred in 9.3 per cent. of cases, being "severe" in 3.6 per cent.; the usual time of onset was from the 2nd to the 6th day. In 78.9 per cent. of cases of hyphæma the blood was absorbed completely within 7 days. The age of the patients, blood pressure, blood clotting mechanism, syphilis and septic foci were not factors influencing its incidence. The slightly increased incidence in diabetes (12.4 per cent. of 235 diabetic patients as against 9.2 per cent. of 1,852 cases without diabetes) is not statistically significant, although cases with diabetes of long standing and those requiring large amounts of insulin showed an increased tendency to severe hæmorrhage.

The type of extraction (extracapsular, failed intracapsular with broken capsule, and intracapsular) had no significant effect. The use of two corneo-scleral sutures decreased the tendency to hæmorrhage. Iridectomy had no definite influence, though the loss of vitreous in large quantities increased the tendency to bleeding to as much as 23.9 per cent. Gaping of the wound, delayed reformation of the anterior chamber, iritis or iris prolapse had no influence.

It is concluded that except for severe diabetes, the general systemic condition of the patient is not related to the incidence of post-operative hyphæma.

The visual results were significantly poorer in cases of post-operative hæmorrhage into the anterior chamber, a result of persistent vitreous opacities. Hæmorrhage did not, however, predispose to late secondary glaucoma nor to phthisis bulbi.

2. *Hæmorrhage into the anterior chamber at the time of operation.* This, occurring in 36 cases (1.75 per cent.), was absorbed rapidly and had no prejudicial result on the final visual results.

3. *Expulsive hæmorrhage.* 3 cases were seen (0.14 per cent.), all in patients over 70 in whom the blood pressure was not unduly raised. This has been the general finding in those cases in the literature in which the blood pressure has been specified.

A. J. B. Goldsmith.

713. A Method of Closing the Cataract Incision by Combining a Corneo-scleral Suture and a Large Sliding Conjunctival Flap. P. H. DECKER. *Trans. Amer. Acad. Ophthalm. and Otolary.*, 52, 210-213. Jan.-Feb., 1947. 1 fig.

The author recommends a corneo-scleral suture covered by a large sliding conjunctival flap (a) to secure strength of closure, (b) to insure against vitreous loss after the wide intracapsular incision, and (c) to seal the incision and avoid delayed formation of the anterior chamber—a factor that he finds responsible for frequent and diverse complications.

The conjunctival flap, obtained by circumcision of three-fifths of the limbal circumference, immediately retracts to allow insertion of a corneo-scleral mattress suture in which the "bites" should be exactly opposite one another. The pillars of the iris are replaced before or after the suture is tied and the conjunctival hood is drawn over the suture by two further sutures, laterally and medially. The corneo-scleral suture is re-exposed as the flap retracts about the fifth day after operation, and removed on the twelfth day: retraction may be inadequate and will then require operative clearance so that the suture may be reached.

Should the corneo-scleral suture be accidentally cut or break in tying, Decker insists that a new one must be inserted or the operation abandoned, since the sliding flap alone will only increase the gape of the wound: for this reason he is insistent that the two procedures must be used in combination.

Advantages of this firm closure of the wound include a greater post-operative freedom and mobility of the patient than was previously possible, reduction of post-operative astigmatism, and good visual results. Disadvantages are that the eye is considerably redder after this operation (the author regards that without concern), a further five minutes of manipulation are necessary, and one cannot relish the rare need for reinsertion of a corneo-scleral suture after delivery of the lens.

P. D. Trevor-Roper.

714. Corneoscleral Suture in Operations for Cataract. O. S. LEE. *Arch. Ophthalm.*, 37, 591-597. May, 1947. 2 figs. 13 refs.

The author describes the advantages of the use of sutures to close the incision in cataract extractions. In his experience the use of the limbal-episcleral sutures was still associated with frequent post-operative hyphæma. Using a Liégnard suture, modified by a previously prepared double knot placed 3 cm. from the end, and two limbal-episcleral sutures placed on each side of it after the extraction of the cataract, the incidence of post-operative hyphæma was reduced from 15.3% to 6.6%.

A. G. Leigh.

715. Failure of Reformation of the Anterior Chamber after Cataract Operations. A. KETTESY. 8th Scient. Meeting Hungarian Ophthal. Soc., Dec. 14, 1946. Reported in *Orvosok Lapja* (Hungarian Med. J.), 3, 389. March, 1947.

In these cases the author incises the face of the corpus vitreum with a fine knife; after this the chamber fills with vitreous and reforms.

P. Weinstein.

716. Siderosis of the Lens and Vitreous. J. R. FITZGERALD.

Vide abs. 628.

XXV. DISEASES OF THE VITREOUS

717. Hæmorrhage into the Vitreous and Abducent Palsy following Immediately after an Operation on an Abscess of the Liver. (Inondation hémattique du vitré et paralysie d'un VI survenues immédiatement après une opération d'abcès du foie). J. SÉDAN, M. PIERRE, J. FIMBEL and E. DOR. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 54-56. Jan.-Feb., 1947.

This unusual combination is explained by the authors as being due to two co-incidental hæmorrhages, one caused by the rupture of a retinal vein, and the other intracranial.

Stewart Duke-Elder.

718. Vitreous Hæmorrhage as a Complication of a Pathological Cataract with Dystrophic Symptoms, especially Myopathic, of Familial Origin.

CH. THOMAS, MICHON, HERBEUVAL, FAIVRE and CH. HENRY.

Vide abs. 857.

719. Siderosis of the Lens and Vitreous. J. R. FITZGERALD.

Vide abs. 628.

XXVI. GLAUCOMA & HYPOTONY

720. An Investigation of the Function of the Arterioles, Capillaries and Veins of the Anterior Segment of the Eye. B. J. TISCORNIA.

Vide abs. 503.

721. Pathogenesis of Glaucoma and Glaucomatous Atrophy of the Optic Nerve.

L. HESS. *Arch. Ophthal.*, 37, 324-335. March, 1947. 42 refs.

The occurrence of congenital abnormalities in glaucomatous eyes is described and co-related with associated changes in the brain and elsewhere. It is suggested that the primary optic atrophy of glaucoma is not entirely explained by an increase in intra-ocular pressure, but that the cause may be found to be of central and congenital origin similar to that which occurs in retinitis pigmentosa.

The influence of a triad of optic nerve atrophy, structural anomalies of the middle fossa and diencephalic signs is elaborated and it is suggested that the main clinical signs of glaucoma can be traced back to a nervous factor which has its origin in the diencephalon.

B. W. Rycroft.

722. On the Intracranial Origin of Glaucomatous Optic Atrophy. (Sur l'origine intra-crânienne de l'atrophie optique glaucomateuse.)

A. MAGITOT. *Ann. d'Ocul.*, 180, 321-341. June, 1947. 8 figs. 61 refs.

Magitot explains glaucomatous optic nerve atrophy by the following hypothesis:—

Near the optic canal one finds a branch of the ophthalmic artery which divides into a descending branch and a recurrent, and nourishes the upper surface of the nerve. Another small artery, usually from the carotid, is the principal vascular supply of the intra-cranial portion of the nerve. This twig is terminally distributed to the chiasma.

Glaucomatous atrophy results from lesions of these and similar vessels. Magitot does not think that the first vascular lesions are obliteration of the vessels (as by sclerosis). At the beginning the circulatory troubles are spasms and œdema. They are provoked by thalamic excitation. It is only in the late stage that the walls of the vessels undergo an obliterative degeneration.

Glaucomatous atrophy is thus a descending atrophy, the cause being a diencephalic dysfunction, mainly vasomotor in nature, leading to local œdema of the nerve, to the various scotomata of glaucoma, and finally to glial proliferation and to atrophy. It is false that the scotomata evolve proportionally to the ocular hypertension. The two phenomena may coincide in time; but are nevertheless independent. Neither is the mydriasis of glaucoma dependent upon raised intra-ocular pressure.

This unusual theory of glaucoma is carefully discussed in an interesting article.

L. H. Savin.

723. Contribution to the Study of the Pathogenesis of the Glaucomatous Excavation. (Contribution à l'étude de la pathogénie de l'excavation glaucomateuse).

P. MARX. *Bull. de la Soc. d'ophtal. de Paris*, No. 1, 22-25. Jan.-Feb., 1947. 6 refs. A short discussion of the literature. The author concludes that the factor of raised intra-ocular pressure cannot be totally neglected in the ætiology of glaucomatous cupping.

Stewart Duke-Elder.

724. Acute Glaucoma: A Follow-up Study.

H. S. SUGAR. *Amer. J. Ophthal.*, 30, 451-468. April, 1947. 3 tables. 1 chart. 8 refs.

The article is a discussion of various aspects of acute glaucoma illustrated by case histories. The main points which arise are:—

1. Eight out of the twelve unoperated eyes developed acute or subacute glaucoma within six years of their first being seen in spite of the continual use of miotics.
2. A negative response to a provocative test has no lasting, if any, significance.

The reasons for 1 and 2 are:—

- (a) The efficiency of the filtration mechanism of an eye pre-disposed to acute glaucoma is, for well-known reasons, steadily deteriorating with the passage of the years.
- (b) Provocative dilatation does not take into account the neurovascular congestive factor.
- (c) Miotics cause vasodilatation as well as miosis and therefore sometimes raise tension instead of lowering it. The author

therefore advocates miotics alone for chronic simple glaucoma, but, for potential acute glaucoma, miotics combined with vasoconstrictors—such as pilocarpine and 0.1% privine or 1.0% neosynephrine but the effect should be observed in hospital before prescribing the combination for out-patient use. [Though sound in theory, he does not show in fact that there is any advantage in the combination.]

3. The classification of acute as congestive glaucoma is a fallacy since an eye with high tension is often "white", at least at first. The term congestive should be reserved for a phase of the disease. A number of other examples of loose thinking in the terminology of glaucoma are criticized.

A. Lister.

725. Conclusions from the Prolonged Observation of Glaucoma Cases. (In Hungarian.)

I. CSAPODY. *Orvosok Lapja* (Hungarian Med. J.), 3, 1281-1283. Aug., 1947.

Increased intra-ocular tension is a progressive disease. Surgical intervention can stop its development, medical treatment can at best only delay it. The sooner the operation the more effective it is. Generally it is a less hazard to operate early than not at all. The operative risk can be lessened by a thorough examination of the case and also by operating first on the less valuable eye for its response may be a useful guide to the technique to be employed with the other.

P. Weinstein.

726. Infantile Glaucoma at the National Institution for Juvenile Blind. (Le glaucome infantile à l'institution nationale des jeunes aveugles.)

P. BAILLIART. *Ann. d'Ocul.*, 180, 257-262. May, 1947. 6 refs.

For the year 1946-47 infantile glaucoma was the cause of blindness in 23% (40 cases) of the children (8-18 years) in the Institution; 25.5% in boys, 16% in girls. In 1940-41 the figure was only 17.2%. Danish figures show a similar increase and confirm the differential sex incidence. The author asks whether these figures indicate an actual increase in the incidence of the affection.

No specific maternal or congenital disease could be ætiologically related to the condition, although syphilis is not entirely ruled out and he therefore advises anti-syphilitic treatment for the mother of a buphthalmic child during subsequent pregnancies.

Forty per cent of eyes had been subjected to some surgical intervention and in these the buphthalmos tended to be less; a slightly higher percentage retained perception of light. He advises that any surgical procedure should be undertaken as early as possible. Sixty-seven per cent had buphthalmic eyes and he stresses the

danger of slight trauma causing such eyes to burst, and advises lateral tarsorrhaphy as a precaution against such accidents. Cases become stabilized at 12-13 years of age.

R. W. Stephenson.

727. Glaucoma in Young Subjects. (Glaucoma sur des jeunes sujets.)

B. H. GROS. *Ann. d'Ocul.*, 180, 366-375. June, 1947.

A résumé of 17 case re. The thesis is advanced that whereas glaucoma of otic origin, the disease is due to a disturbance of e system in the young.

Stewart Duke-Elder.

728. Goniotomy for Congenital Glaucoma. Urgent Need for Early Diagnosis and Operation.

O. BARKAN. *J. Amer. Med. Assoc.*, 133, 526-533. Feb. 22, 1947. 9 figs.

In the past the prognosis in congenital or infantile glaucoma has been poor, the majority of patients becoming blind, or almost blind, in spite of operation or other treatment. The author has devised an operation which, in his hands, has given amazing results. He insists that the diagnosis should be made before the eye is enlarged or the disc cupped. The cardinal symptoms, which are all due to increased tension, are a cloudy cornea, hyperæmia of the bulbar conjunctiva, photophobia, and blepharospasm. The irritative symptoms appear to be due to a roughness of the corneal epithelium, which stains with fluorescein. The estimation of the tension should be made with a tonometer under deep ether anæsthesia.

The actual operation consists in stripping from the angle of the anterior chamber a layer of embryonic tissue which is held to prevent the drainage of aqueous into the canal of Schlemm. This is done with a rather dull-pointed knife, with or without the use of a contact glass. The term "goniotomy" is therefore not strictly correct. Of 76 eyes operated on in this manner the majority retained useful vision. In 66 eyes the tension became normal and has remained so for from 1 to 10 years.

[If the author's conclusions are correct, and they have every appearance of being so, they hold out hope for the future treatment of this condition.]

Eugene Wolff.

729. Glaucoma Treatment.

P. WEINSTEIN. *Amer. J. Ophthalm.*, 30, 755-757. June, 1947. 2 refs.

The writer analyses his experiences when working in Prof. Grosz's clinic in Budapest. Treatment was founded on the Professor's practice.

Where acute glaucoma had responded to pilocarpine, iridectomy was satisfactory. In acute glaucoma which did not respond, Lindner's trephining, which is effective in controlling the raised tension for a few days only, was a useful preliminary to iridectomy. Cyclodialysis was of little value in cases of acute glaucoma.

In chronic inflammatory and simple glaucoma the writer found cyclodialysis less satisfactory than Elliot's trephining.

He observes that the much greater rapidity of absorption of a hyphæma after cyclodialysis than after iridectomy supports Fr. Kiss's anatomical deductions that the ciliary plexus is mainly engaged in absorption, while the ciliary processes are the site of filtration. Cyclodialysis acts presumably by opening the suprachoroidal space and giving access to the ciliary plexus; failure in 50% of cases must be ascribed to synechiæ.

In many cases where, after operative procedures, the eye hardens again, the author has successfully controlled the tension by administering a combination 1:1000 adrenaline with 0.5-1% pilocarpine; 1% adrenaline is administered once or twice a week.

He also observed that where spontaneous venous pulsation is observed, retinal circulation is improved and nutrition better sustained.

J. E. M. Ayoub.

730. The Use of Furfmethide in Comparison with Pilocarpine and Eserine for the Treatment of Glaucoma.

E. V. OWENS and R. C. WOODS. *Amer. J. Ophthalm.*, 30, 995-996. Aug., 1947. 1 table. 2 refs.

The results of treatment of 60 cases of primary glaucoma with pilocarpine and eserine are compared with those of 65 cases treated with furfmethide. The latter was used in 10% solution every 15 minutes for 2 hours and then every 3 hours till the tension was normal or operation had been performed. The methods of treatment with pilocarpine and eserine were not uniform; in most cases they were not instilled more often than 2 hourly and, as far as the eserine was concerned, in strength of seldom more than .5%.

In 77% of the furfmethide group tension was reduced to 35 mm. Hg (Schiotz) or less compared with 53% of the other group. The initial tension in the former was on the whole higher than in the latter. The superiority of furfmethide was found in both early and late cases—judged by the extent of field changes. In a separate group of 20 cases furfmethide, used 3 to 6 times a day, controlled tension when pilocarpine had failed to do so.

[Quoting from the first reference, furfmethide (furfuryl trimethyl ammonium iodide) is related to acetyl choline and has a parasympathomimetic action. But it has no ester linkage and so is not attacked by cholinesterase. It acts therefore without the synergic use of cholinesterase inhibiting substances such as eserine.]

[A comparison of the effects on acute glaucoma of 10% furfmethide and 2% of eserine, both used every 15 minutes for 2 hours would be interesting and fairer to the eserine than the results reported. One would also like to know if furfmethide has any unpleasant effects; it is claimed to be non-irritating.]

A. Lister.

731. The ..

FR. SILLAG
in *Orvosok*

rian.)

Dec. 14, 1946. Reported

The author believes that all operations for glaucoma act by allowing filtration of aqueous into the suprachoroidal space. He performs a sclerectomy operation for all cases of glaucoma.

P. Weinstein

732. Indication for Iridectomy in Hemi-Cyclodialysis. (Indicaciones de la iridectomia en la hem ciclodialisis.)

A. T. ESTRADA. *Bol. del Hosp. Oftal. Ntra. Sra. de la Luz*, 3, 237-245. Jan.-Feb., 1947.

The author believes that iridectomy is a valuable aid in hemi-cyclodialysis, making the latter operation less dangerous and eliminating its complications.

It may be performed weeks before hemi-cyclodialysis or simultaneously at the same operative session.

Iridectomy should always be performed as the final stage of the operation in cases of hæmorrhage and when abundant segregation of uveal pigment is present.

Iridectomy combined with hemi-cyclodialysis is also indicated in cases of very shallow anterior chamber, in the slightly advanced stages of glaucoma, in congestive glaucoma, in cases with degenerative lesions of the iris and in those in which the general condition of the patient suggests the possibility of inflammatory reactions during the post-operative period.

Moacyr Alvaro.

733. Diathermy Puncture of the Ciliary Body. Results obtained by the "Anti-glaucoma" Operation of Vogt. (La ponction diathermique du corps ciliaire. Résultats obtenus avec opération antiglaucomateuse de Vogt.)

R. BENNER. *Ann. d'Ocul.*, 180, 89-103. Feb., 1947. 16 refs.

In 1936 Vogt described his operation which, for the first time, attempted to limit the exaggerated production of aqueous humour by partially destroying the ciliary body. This destruction is obtained by means of tiny scleral punctures made with a diathermy needle.

The patient is prepared (subcutaneous analgesia, akinesia of the orbicularis, local analgesia of the conjunctiva, and retrobulbar injection of "novocain"), and the conjunctiva incised 5 mm. from the limbus. The sclerotic is laid bare in either the superior or the inferior half of the globe. Fixation of the superior or inferior rectus may be used to steady the globe. The diathermy punctures are made with a needle 0.5 mm. long and 0.15 to 0.18 mm. thick, with a current intensity of 60 to 80 mA, 3 to 4.5 mm. from the limbus. These punctures are partly perforating and partly non-perforating, and 100 to 300 are usually made [this number appears excessive and may be a misprint]. A little vitreous escapes from the perforating punctures. After half the circumference has been covered with punctures

the conjunctiva is sutured. The tension of the eye is determined by palpation, and boric acid ointment or pilocarpine ointment is applied. Immediately after operation the intra-ocular tension is increased, and does not become normal until the second or third day. If care is taken not to approach nearer than 3 mm. to the limbus no complications follow. The post-operative accidents that Vogt observed occurred only when the punctures were made too close to the limbus. Clinical details are given of 24 patients.

The following complications occurred; Tyndall's phenomenon in the anterior chamber with a slight hyperæmia of the iris, 5 times; increase of a pre-existing cataract, 3 times; a tear of the conjunctiva with spontaneous cure, once. On one occasion a prolapse of the vitreous occurred, which healed after cauterization. A slight intra-corneal hæmorrhage took place in 1 case, but resolved spontaneously. This operation is not to be used in acute glaucoma. In primary chronic glaucoma it should not replace the usual standard procedures, but should these fail diathermy puncture may be tried as a secondary operation. In cases of congenital hydrophthalmia the author has had excellent results. It is the operation of choice in secondary glaucoma, especially when complicated by iritis. The author also advises it in aphakia and traumatic glaucoma.

Good results are claimed from this operation, considering that it is performed only on eyes attacked with very severe glaucoma and not responding to the usual treatment. Diathermy puncture should be used in cases where other treatment has failed or for some reason cannot be used, as is the case in chronic iridocyclitis.

J. Berkson.

734. Technique of Non-perforating Cyclodiathermy. (Technique de la cyclodiathermie non perforante).

L. WEEKERS and R. WEEKERS. *Ann. d'Ocul.*, **180**, 76-88. Feb., 1947. 5 figs. 8 refs.

The main effect of cyclodiathermy is to create an intense uveal vasodilatation, affecting the ocular tension. High-frequency currents act mainly through the nervous system, but it is probable that a "biochemical action" also plays a part.

Principles.—(1) A non-perforating diathermy electrode lowers the intra-ocular tension as effectively as a perforating one. Perforations are unnecessary and injurious and may cause complications. By increase or repetition of the number of applications, or increase of the current, the intra-ocular tension can be lowered to the desired extent. If the optimum is passed, the eye may be injured or even disorganized. The problem is thus to determine the optimum intensity of the current and the method of application most beneficial in its hypotensive effect, without provoking injurious anatomical disturbances and without altering the visual acuity. (2) Alteration

of the tension can be shown experimentally when a non-perforating electrode is applied anywhere to the sclerotic, but is more marked and more prolonged if the electrode is applied anteriorly in the region of the ciliary body (cyclodiathermy). The best site is the zone corresponding to the ora serrata, 7 to 8 mm. from the limbus. The extent and duration of the fall of tension in non-perforating diathermy are proportional to the amount of the ciliary body involved. It is therefore necessary in the treatment of glaucoma to include, from the first, the whole extent of the ciliary body. (3) The electrode applied must be small. The authors use one with a flat circular end, having a diameter of 0.75 mm. They are thus able to work in a narrow circumscribed area at the posterior limit of the ciliary body, away from dangerous proximity to the lens and iris. Moreover, they apply the electrode direct to the globe without dissecting the conjunctiva. The conjunctiva is necrosed by the diathermy, but the resulting lesion is minimal. (4) With a pyrometric electrode the authors find that the effect varies with the intensity of the diathermy burn. This is more marked the higher the temperature is raised.

Technique.—Local analgesia is used together with retrobulbar injection. The lids are separated by a retractor and the electrode is applied without the use of fixation forceps, rather posteriorly, 7 to 8 mm., and sometimes even 9 mm., from the limbus, behind the ciliary body in the region of the ora serrata. This is, strictly speaking, not a cyclodiathermy, but the nomenclature should be retained because the diathermy current influences the vascularity of the ciliary body through its action on the vasomotor nerve fibres. The number of applications (15 seconds) varies from 12 to 20, the latter being preferable. In order to prevent desiccation of the cornea, it is essential to close the lids for a few moments after three consecutive applications. When the electrode has been applied 20 times the coagulated areas almost touch, with only a very fine band of apparently normal conjunctiva between them. Post-operatively, it is only necessary to bathe the eye 2 to 3 times a day with physiological saline for about a week.

Post-operative Results.—On withdrawing the electrode a small depression surrounded by a white halo of coagulation is seen. Chemosis follows after some hours and lasts for 8 to 10 days. In less than 2 weeks no trace of the operation remains. There is usually no apparent effect on the cornea. Occasionally a transitory loss of sensation occurs, very exceptionally accompanied by a slight haziness. This lasts for only a few days and no treatment is required. Post-operative iritis does not occur. In a small number of cases a transient tendency to mydriasis is seen. Transitory myopia may occur. Six days after operation there is a ring of round areas of retinal œdema, three to four disk diameters in size. The œdematous area is white and dotted with discrete hæmorrhages. Three days

later the œdema has subsided, the hæmorrhages have disappeared, and a brownish pigment is present. Twenty to 30 days later permanent retinal changes have occurred. These consist of white sharp-edged areas, 2 to 3 disk diameters in size; the choroid and retina are atrophied, with only the remains of retinal and choroidal vessels, and some brown pigmentation showing up against the white sclera. The visual field is hardly affected; visual acuity is unaltered and the lens and vitreous are unchanged.

Immediately after operation a slight increase of tension may occur—never more than 10 mm.—lasting a few hours, to be followed by a gradual fall reaching a maximum in 10 to 15 days. So far the best results have been found in chronic glaucoma, but a longer period of observation is needed. The authors' oldest case was treated 8 months ago.

Usually one application is sufficient, but the tension may increase and a further application be required.

The authors claim to have shown in earlier publications that the diminished tension produced by this treatment in glaucoma is due to intra-ocular vasodilatation. All operations for glaucoma consist in application of trauma to the anterior portion of the uvea, the zone of election because of its nerve supply, its vascularity, and its important relation to the aqueous humour. Non-perforating cyclodiathermy has the advantage of reducing trauma to a minimum while producing a good effect on tension. No clinical details are given.

J. Berkson.

735. Action of X-ray Therapy on the Medullary Sympathetic Centres in Glaucoma. (Azione della roentgenerapia sui centri simpatici midollari nel glaucoma. Specie in rapporto alle alterazioni perimetriche ed alla atrofia ottica.)

G. CRISTINI. *Riv. Oto-Neuro-Oftal.*, 19, 124-127. March-April, 1947. 15 figs. 14 refs.

The author suggests X-ray irradiation of the sympathetic centres of the cervical dorsal medullary chain as treatment for defects in the visual fields and glaucomatous optic atrophy. This therapy (600 r for each of the 4 fields into which the cervical dorsal medullary tract is divided: KW 185; focus-skin distance, 30 cm.; Ma. 10; filters, 2 Al and $\frac{1}{2}$ Cu; field $8 \times 10 \text{ cm}^2$) performed in more than 15 glaucomatous patients of whom only 9 among the more serious are described, caused a considerable enlargement of the peripheral limits of the visual field and a considerable reduction of the angioscotomas. The results have been observed up to a period of six months.

The theoretical rationale on which this new therapy of glaucoma is based is an improvement of the blood-supply of the retina and the

optic nerve through an inhibition of sympathetic vasoconstrictor impulses at their centres of origin. It is here that the pupillographic studies of Loewenstein and Schoenberg demonstrated vegetative changes at an early stage in glaucomatous patients. Medical therapy is inefficient because the drugs we employ act only peripherally.

The author, who observed brilliant results in very serious and inoperable cases, advises the early use of this therapy to prevent or retard field alterations and optic atrophy. This therapy should be used as a complement to surgical treatment which serves merely to control one symptom—elevation of the ocular tension.

G. Cristini.

XXVIII. THE LIDS

736. Ptosis of the Left Upper Lid of Metastatic Origin.

E. SINAI. Tel-Aviv Branch, Palestine Jewish Med Assoc, Oct., 1946. Reported in *Harefuah*, 32, 16-17. Jan., 1947.

Ptosis of the upper left lid in a nine-year-old child suffering from an abscess of the outer wall of the abdomen. A metastatic focus at the oculomotor nucleus was assumed and penicillin and sulfa drugs were given. No improvement.

Mitterstein

737. Ectropion of Both Lower Lids in Lupus Faciei.

E. SINAI. Tel-Aviv Branch, Palestine Jewish Med Assoc, Oct., 1946. Reported in *Harefuah*, 32, 16-17. Jan., 1947.

In the course of lupus of the face of old standing (20 years) cicatrization occurred complicated by extensive suppurative dermatitis of the lids. One eye had been blind for many years, the cornea of the other showed multiple ulcers. Successful plastic operation.

Mitterstein

738. Xeroderma Pigmentosum. (Report of Three Cases).

I. KATZENELLENBOGEN. *Acta Med. Orient.*, 6, 117-122. April, 1947. 6 figs. 12 refs.

Xeroderma Pigmentosum was first described by Kaposi in 1870. The affected persons are extremely sensitive to visible light, X-rays and Alpha-rays. The condition is inherited, and may be transmitted by an incompletely sex-linked factor. It has been found recently amongst negroes, a fact which had been denied by earlier writers. Three cases are reported in this paper, occurring in Arabs in Palestine.

The paternal great-grandparents of one affected boy were first cousins. The father married the daughter of his own sister. They had four children, three normal and one affected. There was no family history of the defect. When first seen at the age of two, the boy had brown spots and red urticarial wheals on his face. The skin was chapped and dry, but not scaly. There was marked photophobia and conjunctivitis in both eyes. Later, ectropion of both eyelids developed. The bulbar conjunctiva was rough and hyperæmic. Pseudopterygia extended from the inner canthus to the middle of the cornea. Both corneæ were vascularized.

A year later new lesions appeared on both lips and, with the exception of the armpits, palms, soles and a narrow strip under the

chin, the skin was covered with lentil to pea-sized brown spots. Telangiectasia and tumours appeared on various sites. Histologically these were not malignant. During the succeeding years the condition progressed. The boy is now eleven, and under-developed for his age but intelligent. Besides the usual symptoms such as pigmented lesions, whitish atrophic spots, warty growths and telangiectases, two rare features characterize the case; numerous large angiomas on the skin and mucous membranes and complete destruction of the eyesight through angiomas, xerosis and secondary infection.

Two more cases of Xeroderma Pigmentosum with less dramatic developments have been followed during the past thirteen years. The patients were brother and sister, and intermarriage was known in the family for at least three generations. The disease in these children followed in essentials a course similar to that of the first patient, but was of less intensity.

From the ophthalmological point of view the disease affects primarily the lower lid causing atrophy. The lower bulbar conjunctiva and cornea were exposed, leading to inflammatory changes, symblepharon and corneal ulceration. In this case the lesions which affected the skin—xerosis, pigmentations and tumours—involved the lids and the globe. The vascularization of the bulbar conjunctiva and the hæmangiomas of the lids corresponded to the lesions on the mucous membranes and skin. [Both these pedigrees may have been conditioned by autosomal recessive factors.] *W. J. B. Riddell.*

739. **Diagnosis and Treatment of a Varicosity of the Angular Vein.** (Diagnostic et traitement d'une varice de la veine angulaire.)

J. P. JOLY. *Arch. d'Ophthal.*, 7, 281-283. 1947. 3 figs.

Clinical and operative details of a case are given.

R. W. Stephenson.

740. **Cancer of the Eyelid Treated by Radiation; with Consideration of Irradiation Cataract.**

H. B. HUNT. *Amer. J. Roentgenol.*, 57, 160-180. Feb., 1947. 12 figs. 40 refs.

Of 100 cases of cancer of the eyelid, 80 received X-ray treatment only (this has now become the treatment of choice), 7 received X-ray treatment as well as electrosurgical treatment, 5 both radium and X-ray treatment, 3 radium alone, 3 radium and electrosurgery, and 2 electrosurgery only.

Radiation therapy is particularly suitable for infiltrating carcinoma of the eyelid, since it eradicates the carcinoma but the basic lid structure is preserved where it has not been destroyed by the carcinoma. The author believes that the scars are more pliable and less atrophic after fraction-dose treatment than after massive single-dose irradiation.

A non-filtered radiation produced at 70 kV peak is usually sufficient for the eradication of small and superficial carcinomata of the

eyelid. Lesions of over 3 to 4 mm. in thickness require 90 kV radiation filtered through 1 mm. of aluminium, while for the more infiltrating lesions 130 kV radiation filtered through 0.25 mm. of copper plus 1 mm. of aluminium is advisable. Deep infiltration of the orbit was treated with 200 kV radiation filtered through 0.5 mm. of copper or a Thoraeus filter. For the single massive dose treatment, 2,875 r (measured in air) were given. A total dose of 3,400 to 4,200 r was given when the two treatments were administered within 2 to 7 days; a total of 4,000 to 5,400 r was given when three treatments were delivered within 3 to 14 days; and 5,000 to 8,500 r when five or more treatments were given within 5 to 21 days. The author believes that a non-filtered radiation of 60 kV peak and 15 cm. or less skin-focus distance should be as effective as contact therapy. The lens is protected by a shield of lead 1 mm. thick. With such a shield there is no danger of secondary irradiation cataract from X-ray therapy, but the shield offers little protection against the gamma rays of radium.

Four of the 100 patients have died within the last 15 years. Therapeutic failures result from the presence of advanced and inaccessible disease, impairment of the tumour bed by previous inadequate therapy, an insufficient or unevenly distributed dose, use of small fields which do not include a sufficient margin round the tumour, and an inadequate follow-up of the cases. *A. Orley.*

741. Blepharo-kerato-conjunctivitis cured by Removal of Tonsils and Adenoids.
N. ALBU, L. BUZONIU and E. SEPTILICI.
Vide the 657.

742. *A.* *.. Marcus Gunn. (Syncinésie e Marcus Gunn). g Feb. 22, 1946. Reported*

M. ROGER, *Soc. d'Oto-Neuro-Ophthal.*, 19, 108-109. Feb., 1947.
in *Rev. d'Oto-Neuro-Ophthal.*, 19, 108-109. Feb., 1947.
A case is described in which jaw-winking was evident, but in which raising of the left upper lid only occurred on firm closure of the jaws but not on opening the jaws. *G. I. Scott.*

743. Marcus Gunn's Syndrome and Voluntary Nystagmus. (Fenomeno de Marcus Gunn y nistagmus voluntario.)
S. SORIA. *Arch. Soc. Oftal. Hisp.-Amer.*, 7, 325-334. April, 1947.
5 figs.

The author describes a case of Marcus Gunn's syndrome occurring in a young man of 26 years, who suffered from a left ptosis of congenital origin. There was no family history of any congenital abnormality. When looking straight in front there was ptosis of the left eye which decreased on opening the mouth so that the palpebral aperture was then greater than in the right eye.

On looking down with the mouth still open there was a noticeable lid retraction on the left side. On lateral movement of the mandible to the right, lid retraction was present. On lateral movement to the left, the ptosis was the same as when the mouth was closed. This

alteration in the position of the left upper lid is clearly demonstrated in the five photographs given in the text.

The patient could also produce voluntary nystagmus on looking down; it was rapid, horizontal and pendular in character and of small amplitude; it could only be maintained for a period of 40 seconds.

The theories and cases quoted in the literature, both concerning Marcus Gunn's syndrome and voluntary nystagmus, are discussed in detail.

E. E. Cass.

744. Syndrome of Marcus Gunn. Suggested Operative Treatment.
(Syndrome de Marcus Gunn. Son traitement opératoire.)

G. FARNARIER. Soc. d'Oto-Neuro-Ophtal. du Sud-Est, meeting June 28, 1946. Reported in *Rev. d'Oto-Neuro-Ophtal.*, 19, 127-128. Feb., 1947.

Farnarier describes the case of a patient who suffered from jaw-winking associated with ptosis. A Motais' operation had been performed for correction of the ptosis, with an excellent result, but the lid still moved up on movement of the jaw.

Farnarier performed Nida's operation, in which a strip of tarsus is freed except at one end, the free end being passed beneath the superior rectus muscle to which it is attached. This procedure anchored the lid to the globe and relieved the patient of her distressing complaint.

G. I. Scott.

745. Blepharospasm and Commencing Facial Hemispasm associated with Spasm of the Palate and Abnormal Movements of the Left Limbs. (Blépharospasme et début de paraspasme facial. Contractions cloniques du voile du palais et mouvements anormaux discrets des membres gauches.)

H. ROGER and J. PELLEGRIN. Soc. d'Oto-Neuro-Ophtal. du Sud-Est, meeting June 28, 1946. Reported in *Rev. d'Oto-Neuro-Ophtal.*, 19, 124-125. Feb., 1947.

A case is described and the aetiology discussed.

G. I. Scott.

746. A Simple Modification of Operations for Entropion of the Eyelids.

R. H. BOCK. *Arch. Ophthalm.*, 37, 650-651. May, 1947. 1 fig.

This operation applies only to mild degrees of entropion.

Four double-armed sutures are passed through the upper border of the tarsus from within outwards, then along the anterior surface of the tarsus downward and finally emerging 1-2 mm. above the lashes (upper lid) or below (lower lid), where the sutures are tied through glass beads.

Seymour Philips.

747. Xanthomatosis.

C. P. PETCH. *Proc. Roy. Soc. Med.*, 40, 118-119. 1947.

Case report involving lids, elbows, knees and plantar creases. Areas of sclerosis, in cranial vault seen by X-rays. Enlarged liver and spleen.

Stewart Duke-Elder.

748. Vitamin D₂ in the Treatment of Lupus Vulgaris.

E. GAUMOND and J. GRANDBOIS. *Canad. Med. Assoc. J.*, 56, 205-207. 1947. 4 tables.

The report of a spectacular cure of a stubborn case of lupus vulgaris affecting the face and lids of 29 years' duration by vitamin D₂. In this case the vitamin (15 mgm.) was administered orally dissolved in alcohol with calcium gluconate (0.5 gm. daily). The course was—1st week 3 doses, for 3 weeks 2 doses, thereafter 1 dose weekly for 2½ months.

Stewart Duke-Elder.

XXIX. THE LACRIMAL APPARATUS

Lacrimal Gland

749. Sjögren's Syndrome—Presentation of Two Cases. (Syndrome de Sjögren—présentation de deux malades.)

E. HARTMANN and S. DE SEZE. *Bull. de la Soc. d'Ophtal. de Paris*, No. 1, 10-13. Jan.-Feb., 1947.

Although this syndrome was first described in 1933, the present paper places on
th patients were women, aged
d on general physical examina-
ant had received alcohol injec-

W. J. B. Riddell.

750. Relation between Sjögren's Disease, the Plummer-Vinson Syndrome and Ariboflavinosis.

ERIK GODTFREDSSEN. *Acta Ophthalm.* (Copenhagen), 25, 95-109. July, 1947. 25 refs.

This paper is an attempt to elucidate the still obscure ætiology of kerato-conjunctivitis sicca (Sjögren's disease) which, besides the typical ocular symptoms (lack of tears, staining of the marginal area of the bulbar conjunctiva and cornea with rose-bengal solution) is also associated with dryness of the upper alimentary tract (xerostomia, etc.), dysphagia and achylia as well as a chronic progressive polyarthritis. Sjögren's disease has several of these signs and symptoms in common with the Plummer-Vinson syndrome (or dysphagia sideropenica) and ariboflavinosis (vitamin B₂ deficiency): the ætiology of both of these has been elucidated. The three syndromes are reviewed and the inter-relation between them discussed. The author's investigations of 23 women suffering from Sjögren's disease showed that the Plummer-Vinson syndrome formed part of the pathological picture in three cases. He points out that in spite of numerous clinical features common to the three, especially those affecting the epithelium of the upper alimentary tract, Sjögren's syndrome differs essentially from ariboflavinosis and the Plummer-Vinson syndrome. The poor effect of treatment with iron and vitamin B₂ is especially mentioned. All cases of polyarticular arthritis with eye-complaints should be suspected of Sjögren's disease because of the frequent occurrence of this syndrome. Instead of irritative applications, the best treatment is cauterization of the puncta lacrimalia and the instillation of mild medicaments (artificial tears or liquid paraffin).

E. Godtfredsen.

751. Dacryoadenitis after Influenza. (Tränendrüsenentzündung nach Grippe.)

L. GÄT. *Klin. Med.*, 2, 276-278. March, 1947. 2 figs.

of "gastric influenza" because of
1 resistance in their temporal thirds.
An excised portion of the lacrimal
rm applications and foreign protein
were given as treatment. Eight weeks later the swelling of the lids persisted.

H. L.

752. Adenocarcinoma of the Lacrimal Gland following a Mixed Tumour of Twenty-five Years Duration.

I. E. RUBIN. College of Physicians of Philadelphia, Section of Ophthalmology. Reported in *Arch. Ophthalm.*, 37, 686-688. May, 1947.

Mixed tumour, though a rare condition, is the commonest disease of the lacrimal gland. It resembles mixed tumour of the salivary gland and tends to be slowly progressive. Recurrence is said to be common, and the usual roentgen therapy has little effect. A case of mixed tumour of the lacrimal gland is described which commenced at the age of 10 years. Excision was carried out at the age of 16 years, and again at the age of 33 years. Exenteration of the orbit was performed about two years later, and the pathological examination of this material revealed an adenocarcinoma.

A. G. Cross.

753. Technique of Removal of the Orbital Portion of the Lacrimal Gland. (Technique anatomique d'ablation de la glande lacrymale orbitaire.)

M. E. HAAS. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 36-39. Jan.-Feb., 1947. 1 fig.

The procedure employed by the author in removing the orbital portion of the lacrimal gland is described in detail. A cutaneous incision about two cm. long is made through the upper attachment of the orbicularis down to the bony orbital margin. The periosteum is separated from the roof of the orbit and the sulcus in which the lacrimal gland lies. The periorbita is incised, and a good exposure is obtained with rake retractors. Blunt dissection is important in order to avoid unnecessary bleeding. The gland is dragged upon as little as possible. The portion of the gland is removed with a clean sweep, and the wound closed with two catgut sutures. A frontal mirror and a daylight lamp were found to be of great help in distinguishing between the grey colour of the gland and orbital fatty tissue. The author has found the method very satisfactory and the results have been consistently good.

W. J. B. Riddell.

Drainage Channels

754. Mycotic Obstruction of the Nasolacrimal Duct. (*Candida Albicans*)

M. FINE and W. S. WARING. *Arch. Ophthalm.*, 38, 39-42. July, 1947. 1 fig. 12 refs.

Mycotic infections of the lacrimal apparatus have been recognised for nearly a hundred years. Two cases are described in which obstruction of the nasolacrimal duct was followed by the extrusion of a cast-like obstruction of the duct. The yeast *Candida Albicans* was identified in one cast.

A. G. Cross.

755. Profuse Ocular Hæmorrhage after Tamponage of the Nose for Epistaxis. (Profuse Augenblutung nach Nasentamponade wegen Epistaxis.)

F. MESSNER. *Wien. klin. Wchnschr.*, 59, 469-470. July, 1947.

The author's second observation of this complication. Spontaneous epistaxis occurred in a hypertonic woman aged 72, who treated it by packing the nose with

cotton wool. Blood issued from the inferior lacrimal punctum of the left side. Tamponage of the nose with stryphnon gauze, intravenous calcium injection, and clauden-coagulen injected intramuscularly stopped the hæmorrhage. Thirty-six hours later the patient was in good condition with diffuse reddening of the locus Kieselbachii on both sides.

[A somewhat similar case, occurring after a fracture of the nasal bone was described by E. V. Urbantschitsch. *Wien. klin. Wchschr.*, 58, 488 August, 1946. Valière-Vialeix made a similar observation in 1939.] H. L.

756. Failure of the Modified Toti Dacryocystorhinostomy. (Beiträge zur Frage des Versagens der modifizierten Totischen Dakryozystorhinostomie.)

G. GUNTHER. *Klin. Monatsbl. f. Augenh.*, 111, 176-181. Jan., 1947. 2 figs. 5 refs.

Four cases are described in which a dacryocystorhinostomy was unsuccessful and had to be repeated. The most common cause of failure was too small a bone window, which should be 15 mm. in diameter. The author found that periosteal growth had closed the bone opening and filled the sac with granulomatous tissue. In one instance the sac had been stitched to the mucous membrane of the ethmoid bone. This mistake might have been avoided if a rhinological and X-ray investigation had been carried out before the operation and if a gauze drain had been in position before the bone window was made. After-treatment with wash-outs should be prolonged; follow-up examination by the rhinologist is desirable.

A. Loewenstein.

757. Congenital Bilateral Fistula of Tear Ducts. One Side Treated by Toti's Operation.

J. F. SIMPSON. *Proc. Roy. Soc. Med.*, 40, 286. April, 1947.

In the patient, a boy aged 7, the lacrimal ducts opened on to the face $\frac{1}{2}$ inch below the inner canthi. Lipiodol showed a dilated duct and sac, patent inferior canaliculi, and no drainage into the nose. Right dacryocystorhinostomy with excision of the fistula cured the epiphora. This congenital deformity is rare.

A. J. B. Goldsmith.

758. Tear Sac Probed Through Canaliculus of Everted Lid.

trauma to the canaliculus is caused, the results are less serious when the upper is affected. The manipulation of passing a probe through the upper canaliculus can be assisted by everting the upper lid.

A. G. Cross.

XXX. THE ORBIT

759. Some Observations of the Symptomatology and Diagnosis of Cases of Proptosis.

H. BEY. *Brit. J. Ophthalm.*, 31, 155-160. March, 1947. 6 figs.

A large number of cases of proptosis are discussed, and divided into three groups according to the cause: (1) due to extra-orbital

causes ; (2) due to intra-orbital causes ; (3) due to disease of the bony orbital wall. The cases in the first group are mainly of nasal origin, and may be inflammatory, due to infection of the frontal or ethmoid sinuses (maxillary sinus infection alone without involvement of the anterior ethmoid cells does not seem to be a cause of proptosis) or due to malignant or benign neoplasms of the nose or nasopharynx. Thirty-one cases belong to the intra-orbital group of which 2 cases showed inflammatory changes of the orbital tissue round the globe, in 1 case due to amyloid disease, in 1 syphilitic. The rest of this group comprised cysts (dermoid, retention, and hæmorrhagic cysts of the lacrimal glands, and parasitic cysts) and neoplasms, which were the commonest cause (23 out of 31 cases) ; 6 of these were simple, the rest malignant. The third group was the least common. One case of traumatic origin was due to the formation of an arterio-venous varix following a fracture of the maxilla. Some were inflammatory (acute and chronic osteomyelitis, tuberculous abscesses, and gummata), and the remaining one was a rare case of capillary angioma in the frontal bone.

It is remarkable that, despite varying degrees of proptosis and deviation of the globe, there was rarely complaint of double vision. Clinically it is sometimes impossible to differentiate between inflammatory orbital tissue and malignant neoplasm. The author therefore recommends repeated radiological examination and biopsy. Radiographs taken in different positions and a comparative X-ray study of both orbits are valuable in diagnosis. An important point is the presence of an X-ray shadow of the soft tumour mass in relation to the X-ray shadow of the primary orbital dilatation. Among therapeutic tests, repeated aspiration of an empyema of the maxillary antrum associated with ethmoiditis considerably improved a proptosis thought to be due to new growth. Anti-syphilitic treatment in a case with a positive Wassermann reaction was successful. The author favours biopsy in every case with suspicion of malignancy before deciding on a radical operation. *F. Mestitz.*

760. Non-Inflammatory Exophthalmos. (Exoftalmia no inflammatorias.)

E. ADROGUE and F. C. CERBONI. *Arch. de Oftal. de Bs. As.*, 23, 1-35. Jan.-March, 1947. 1 chart. 98 refs.

The authors deal with their subject under the following headings :

Definition, in which they state that exophthalmos means a displacement of the eye forwards, out of the normal anatomical position it occupies in the orbit. Anatomical and physiological details are given.

Pathogenesis, which is discussed under three sub-headings:

- (1) A decrease in the forces which maintain the globe in its position in the orbit.
- (2) Increase of the quantity of blood in the orbit.
- (3) Increase of the orbital contents due to neo-formations.

Semiological considerations are followed by a table in which the various types of exophthalmos are classified according to their direction, evolution, reducibility, impairment of motility, those which are palpable and non-palpable, those causing alterations in the fundus, vision or visual fields, associated local symptoms, X-ray symptoms, diagnostic proof, general clinical data, age, frequency, sex and localization.

Therapy. The treatment of non-inflammatory exophthalmos depends upon the cause and is usually surgical; only the types which respond to surgical treatment are considered in this article. Various types of operations are discussed.

Moacyr Alvaro.

761. Drainage in Infected Cavernous Sinus Thrombosis.

W. A. FAIRCLOUGH. *Aust. and N.Z. J. Surg.*, 16, 193-196. Jan., 1947.

The author mentions three fatal cases of cavernous sinus thrombosis, and eight more or less completely recovered cases of orbital cellulitis of the pre-chemotherapeutic days.

Amongst diagnostic points it is considered that in orbital cellulitis the loss of movement of the globe is earlier in onset and more marked in degree than in sinus thrombosis, and that an outward component is often present with the proptosis in orbital cellulitis.

A case of drainage of an infected cavernous sinus thrombosis originating from a staphylococcus aureus furuncle of the left ala nasi is recorded. The local signs were forward proptosis, marked œdema of the lids and protruding chemosis, anæsthetic abraded cornea, left mastoid œdema with displaced auricle, and slight chemosis at the caruncle of the right eye. In spite of treatment with sulphadiazine and three hourly intra-muscular injections of penicillin the general condition deteriorated, and after thirty-six hours the patient was stuporose and so obviously failing that it was decided to make an effort to drain the sinus. Under "Pentothal" anæsthesia the œdematous lid was strongly retracted and a scissor snip was made in the chemotic conjunctiva. A pair of closed artery forceps was introduced into the wound and advanced to the apex of the orbit, to the superior orbital fissure. Here the resistance increased but the forceps were pushed on for about half an inch, fracture of the sphenoid wings being felt distinctly. The blades were then opened partially with moderate force. The presence of the third, fourth, fifth and sixth nerves was appreciated but ignored. Withdrawal of the instrument was followed by a small amount of faintly pus-streaked blood. A rubber drainage tube was introduced into the very depths and penicillin gently syringed through. The tube was stitched in position and hourly irrigation with penicillin was subsequently carried out.

An aluminium guard with a hinge of adhesive attached to the forehead was used to protect the eye and to facilitate access.

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It is remarkable that, despite varying degrees of proptosis and deviation of the globe, there was rarely complaint of double vision. Clinically it is sometimes impossible to differentiate between inflammatory orbital tissue and malignant neoplasm. The author therefore recommends repeated radiological examination and biopsy. Radiographs taken in different positions and a comparative X-ray study of both orbits are valuable in diagnosis. An important point is the presence of an X-ray shadow of the soft tumour mass in relation to the X-ray shadow of the primary orbital dilatation. Among therapeutic tests, repeated aspiration of an empyema of the maxillary antrum associated with ethmoiditis considerably improved a proptosis thought to be due to new growth. Anti-syphilitic treatment in a case with a positive Wassermann reaction was successful. The author favours biopsy in every case with suspicion of malignancy before deciding on a radical operation. *F. Mestitz.*

760. Non-Inflammatory Exophthalmos. (Exoftalmia no inflammatorias.)

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The authors deal with their subject under the following headings :

Definition, in which they state that exophthalmos means a displacement of the eye forwards, out of the normal anatomical position it occupies in the orbit. Anatomical and physiological details are given.

Pathogenesis, which is discussed under three sub-headings: (1) A decrease in the forces which maintain the globe in its position in the orbit. (2) Increase of the quantity of blood in the orbit. (3) Increase of the orbital contents due to neo-formations.

764 Primary Malignant Exophthalmos, a Case Operated on by Naffziger's Method (Primær malign eksoftalmus, et tilfælde opereret efter Naffziger)

J H VOGT and A TORNILDSEN *Nordisk Med*, 34, 1303-1304 June 6 1947 3 figs 4 refs

Case report of a male, 58 years of age, with a cryptogenetic primary bilateral exophthalmos. There were no signs of Graves' disease, local orbital tumour or thrombosis of the cavernous sinus. X-ray treatment of the pituitary area was given with no effect by Naffziger's technique was not successful and the impairment of visual acuity. Five months later the visual acuity became reduced 5 mm.

E Godfredsen

765 Malignant Exophthalmos

meeting April 15, 1946 Reported in *Amer*

operated by thyroid extract stilbestrol, fluid drainage of the pituitary gland. The levator palpebrae superioris was resected. A G Leigh

766 Acute Strangulation of a Varicocele of the Orbit. (Étranglement aigu d'un varicocele de l'orbite)

JEAN-SEDAN, J PAILLAS and J FIMBEL Soc d'Oto-Neuro-Ophthal du Sud-Est, meeting Jan 25, 1946 Reported in *Rev d'Oto-Neuro-Ophthal*, 19, 98-100 Feb, 1947

The authors describe the case of a young female in whom they had diagnosed a varicocele of the left orbit. One evening, while trying to lift a heavy box, she was suddenly seized with violent pain in the left orbit, followed by flashes of light, vertigo, headache and vomiting. At the same time the eye-ball was thrust forward through the palpebral aperture and visual acuity rapidly decreased, until, at the end of a few hours, she could only count fingers at one metre. When examined, the intra-ocular tension was normal, but the cornea was oedematous from exposure. There was no conjunctival oedema or ecchymoses. A systolic murmur was heard on auscultation over the eye-ball.

Carotid ligation was considered too dangerous a procedure without daily preliminary digital compression of the carotid, and the condition was, therefore, kept under observation for three days. No change occurred during this period. On the fourth day, however, the condition rapidly subsided and returned to the state existing before the attack.

G I Scott

767 Pseudo-Tumor of the Posterior Pole (Pseudo-tumeur du pôle postérieur)

G. OFFRET, P HERMANN and F HERVOUET. *Bull de la Soc. d'Ophthal de Paris*, No 1, 49-53 Jan-Feb, 1947

A pseudo-tumour of the choroid was associated with a pseudo-tumour of the orbit, the histological nature of the two being different. The author concludes that the orbital tumour was primary and the choroidal disturbance was a secondary reaction thereto, caused perhaps by vascular stasis.

Stewart Duke-Elder.

768. Neuroblastoma of the Adrenal with Orbital Metastases. (Report of Five Cases with Autopsy Findings.)

R. N. SHAFFER. *Amer. J. Ophthal.*, 30, 733-740. June, 1947. 5 figs. 7 refs.

The purpose of this paper is to add five proved cases of neuroblastoma of the adrenal with orbital metastases and to record the failure of radioactive phosphorus in the treatment of this fatal tumour of childhood.

Metastases in the skull and long bones are a common finding in this disease, and deposits are also found in the liver, lungs and lymph nodes. X-ray studies of involved bones show multiple tiny areas of resorption giving a finely granular osteoporosis with uneven density of the skull and pelvis. Patients rarely live more than one year after the first symptoms appear, and death occurs in every case in which skull metastases are present.

In these 5 cases of neuroblastoma of adrenal origin, all had orbital metastases. One patient lived $2\frac{1}{2}$ years after the onset of symptoms but the others all died in 4 to 12 months.

Radioactive phosphorus was used in the treatment of two of these patients, once orally and once intravenously but in neither case was there any benefit from the treatment.

Seymour Philips.

769. Syndrome of the Sphenoidal Fissure. H. ROGER, P. MOUREN and A. ROUSSEL.
Vide abs. 729.

XXXI. THE OCULAR ADNEXA

770. Closed Empyemas of the Frontal Sinus with Fistulous Perforation near the Inner Angle of the Eye. (Ueber geschlossene Empyeme der Stirnhöhle mit fistulösem Durchbruch neben dem inneren Augenwinkel.)

A. MERTON. Meeting of the Soc. of Phys. Vienna. Reported in *Wien. klin. Wchnschr.*, 58, 78-79. Feb., 1947.

Two cases of empyema of the nasal sinus are reported with normal endonasal picture. In the first case an injury occurred five years previously to the right frontal region where local tenderness persisted with a swelling at the internal canthus. An incision was made as for dacryocystitis and a pyocele was found. A radical operation was done on the frontal sinus. The posterior wall was absorbed and the sac of the pyocele had firmly fused with the dura mater. In the second case a fistula occurred at the internal angle of the eye associated with an abscess at the glabella, which was incised. Closed empyemata of both sides were found and operated upon. Both patients were cured by operation.

H. L.

771. Connection between Eye-Diseases and Teeth. (In Hungarian.)

J. SZÉKELY. *Orvosok Lapja* (Hungarian Med. J.), 3, 1205-1207. Aug., 1947.

A general article on the connection of eye-diseases with dental infection, discussing the symptoms and treatment in a manner suitable for the general practitioner. It contains nothing new.

P. Weinstein.

772. Syndrome De Ménière—a Personal Record. (Syndrome de Ménière—Auto-Observation).

BUYS. *Rev. d'Oto-Neuro-Ophtal.*, 19, 193-212. May-June, 1947.

Buy's describes in great detail the symptoms from which he suffered and his account also includes notes of objective findings recorded by various colleagues.

The original article should be consulted as constituting a unique record of the life-history of Ménière's syndrome.

G. I. Scott.

XXXII. THE OCULAR MOVEMENTS

Physiology

773. Ocular Torsion in Health and Disease.

J. I. PASCAL. *Eye, Ear, Nose and Throat Monthly*, 26, 270-273. May, 1947.

By the ingenious use of a diagram consisting of two benzene rings, one for each eye, the legs of which represent the individual extra-ocular muscles, the author illustrates the torsion which occurs in physiological and pathological states.

J. D. Fraser.

774. A Study of the Anatomical Variations in the Attachment of the Oblique Muscles of the Eyeball.

W. H. FINK. *Trans. Amer. Acad. Ophthal. Otolary.*, 52, 500-513. May-June, 1947. 4 figs.

One hundred eyeballs were examined in order to determine the relation of the superior oblique insertion to the superior rectus muscle and of the inferior oblique insertion to the lateral rectus and optic nerve. In both instances wide variations in the insertion of the oblique muscles were found, and the author suggests that many so-called "paretic" oblique muscles are in reality normally innervated muscles acting in an abnormal manner because of an abnormal insertion.

It also appeared that the nasal end of the superior rectus insertion is 2 to 3 mm. closer to the limbus than the temporal end.

The author recommends that operations upon the inferior oblique should be at its insertion into the globe, and not at its origin. Where it is desired to curb the action of this muscle, the latter should be detached from the eye as close as possible to its insertion, and re-attached by interrupted sutures, the line of re-insertion being parallel to its original position, the anterior point of which can be measured back from the limbus with callipers.

Many valuable measurements concerning the relationships of the oblique muscle insertions are contained in this paper.

Seymour Philips

775. Fusion Disturbances: "Horror Fusionis" and Convergence Spasms. (Fusionsstörungen. Horror fusionis und Konvergenzspasmen.)

P. A. JAENSCH. *Klin. Monatsbl. f. Augenh.*, 111, 142-149. Jan., 1947. 13 refs.

Operative treatment of squint is still successful if some degree of convergence or divergence is left. Fusion is normally powerful enough to compensate for the angle of the optical axes. There are cases, however, in which no tendency to fusion is present. These account for the rare failures in squint operation. The causes of lack of fusion may be congenital or acquired (anomalous retinal correspondence or aniseikonia is not the cause). Even if fusion is achieved for a moment, the images soon "jump about". Two of

the author's cases show that disturbance of fusion can be acquired; the lesion is located, according to the author, in the posterior longitudinal bundle near the VIth nucleus. Five cases of disturbance of fusion due to cerebral concussion are described. It is unfortunate that the breadth of fusion cannot be measured before operation; if it could, operation would be avoided in those rare cases in which persistent post-operative diplopia forces the surgeon to restore the position of the eye. Lack of fusion has nothing to do with hysteria, with which it is sometimes confused.

A. Loewenstein.

776. The Direction of Visual Lines when Fusion is Broken as in Duction Tests.

M. W. MORGAN. *Amer. J. Optom.*, 24, 8-12. 1947.

Direction of the visual axes was measured before and after duction tests by means of a haploscope. Images were projected on a screen one meter distant and visible only to the right eye. Results were identical for the 10 subjects. As the arms of the haploscope are converged, the target appears displaced in front of the screen and smaller. The reverse is true when the arms are diverged. The apparent change in size is a logical correlate of the apparent change in distance. Dissimilar parts of the fusion target appear approximately 1 cm. apart before diplopia is reported. Then the two images separate gradually until apparent movement ceases at the end of 2 or 3 seconds. At this time the eyes approximate the phoria position. The slow movement after fusion is broken, and the temporary over-convergence noted after repeated stimulation of convergence, are probably due to "after discharge" from the motor centres when sensory stimulation has ceased.

M. R. Stoll. Psychol. Abs.

Heterophoria

777. Tests for Heterophoria. R. G. SCOBEE and E. L. GREEN. *Trans. Amer. Acad. Ophthal. Otolary.*, 52, 179-197. Jan.-Feb., 1947. 8 tables. 1 fig. 9 refs.

Vide abs. 426.

778. Divergence Excess: An Anomaly of the Extrapyramidal System.

E. HEALEY. *Amer. J. Ophthalm.*, 30, 753-754. June, 1947.

This condition formed 2% of all the cases treated in an orthoptic department during five years. Various types of refractive error were found to be associated, hypermetropia predominating.

A central extrapyramidal control of divergence is postulated, and the anomaly may be neutralized by the training of a "fixation reflex" or attention mechanism, to prevent the divergence. Orthoptic training can develop this control.

J. E. M. Ayoub.

779. A Survey of Esophoria and Ciliary Spasm.

G. IRVINE. *Brit. J. Ophthalm.*, 31, 289-304. May, 1947. 2 tables.

A series of case histories are given to illustrate the types of esophoria and to stress the occurrence of ciliary spasm with or without muscular imbalance.

They illustrate the relief obtained in esophoria which is less complete or transitory in the cases where a divergence weakness is present.

As regards ciliary spasm, the outstanding symptoms are blurring of the distant vision and reduced acuity with Snellen's types, pain in the eyes, headaches, and occasionally vomiting. Uniocular cases are noted and one patient aged 51 was encountered.

The most effective treatment is a combination of orthoptic training aimed at relaxation and atropine.

A. Lister.

780. Notes of the Aetiology of Horizontal Imbalance.

J. L. DOWDESWELL. *The Optician*, 113, 243-245. 1947.

It is suggested that "nervous" horizontal heterophoria is due to some abnormal condition of the convergence centre.

B.O.A.

Concomitant Strabismus

781. Sensorial Retinal Relationships in Concomitant Strabismus. H. M. BURIAN. *Arch. Ophthalm.*, 37, 336-368, 504-553, 618-640. March, April, May, 1947. 9 figs. 2 tables. 106 refs.

The first section of this paper is taken up with an analysis and definition of normal and anomalous retinal correspondence. It is pointed out that the objective and subjective spheres of vision are incommensurate; indeed, constant discrepancies exist between them. Corresponding retinal elements are those which have common visual directions, and these subjectively are referred to an imaginary third cyclopean eye. Sensorial retinal relationship or correspondence is "normal" if the retinal elements which should be corresponding, such as the two foveæ, have common visual directions; if retinal elements which are normally disparate acquire a common visual direction, the relationship is termed anomalous.

Section 2 describes methods used clinically in examining the sensorial retinal relationships. The first group of these comprises methods in which the objective angle of squint is compared with the subjective directional localization of bi-retinal stimuli with the angle at which the patient fuses or superimposes double visual impressions reaching the retina. Examples are the use of the synoptophore. In the second group the visual angles or directions are determined directly by after-image tests.

Section 3 considers the clinical picture of anomalous retinal correspondence. Normal retinal relationship which should be physiologically fixed is not so, as the motor system of which the eye is an outgrowth is not fixed. Anomalous correspondence is an adaptation to a variable condition and its development is influenced by various factors as: (1) the state of binocular vision existing prior to such condition; (2) the stability of the motor anomaly; and (3) the age of the patient. Illustrative cases are described. Anomalous correspondence while it represents an attempt at binocular co-ordination, and cannot give the same accuracy as does normal correspondence.

Section 4. The principles of treatment are discussed under the general headings of (1) occlusion, (2) operation, (3) use of prisms, and (4) orthoptic exercises. It is concluded that there is no one certain panacea for all cases. Section 5. There is no discussion as to the origin of anomalous correspondence, but of retinal rivalry, regional suppression and defective binocular normal correspondence. Section 6 is taken up with a review of the literature of the past 20 years with special reference to important papers, under subsections: (1) a review of diplopia and binocular triplopia, and (2) many cases of anomalous correspondence and orthoptic treatment.

Section 7 makes an attempt to dispel the clouds of terminological confusion which tend to obfuscate any discussion of the subject. In Section 8 the author's conclusions are given. Those which have not been sufficiently indicated above are that normal correspondence in cases of squint existing from the early days of life is the result of an innate mechanism; anomalous correspondence is acquired through usage and is connected with other sensorial phenomena. The more stable the position of the eyes the more stable is the anomalous relationship, and the more constantly will it be found under all the different test conditions.

[The above abstract does perhaps scant justice to a painstaking and carefully thought-out article, which although it presents little new, attempts to give a coherent picture of the present views on a condition which is, perhaps, one of the most puzzling and difficult that the ophthalmologist is called on to consider.]

A. J. B. Goldsmith.

782. A Squint Syndrome.

K. C. SWAN. *Arch. Ophthalm.*, 37, 149-154. Feb., 1947. 4 refs.

Seven cases of convergent squint are reported in all of which the blind spot of one eye overlapped in the binocular field the fixation point of the other eye. This habit appeared to have developed in order to obviate diplopia. Hypermetropia or anisometropia, convergent squint of 12 to 17 degrees, normal retinal correspondence, and fusion with some amplitude at the appropriate angle were present. In addition to the prescription of glasses and operation, treatment must include orthoptic exercises.

H. Neame.

783. Which Squints Respond Best to Orthoptic Treatment.

E. ROTH. *Amer. J. Ophthalm.*, 30, 748-752. June, 1947.

Accurate diagnosis of the type of squint is important (a) in selection of cases for orthoptic training which are likely to respond without waste of departmental facilities, (b) choosing the best time for operation, and (c) planning beforehand the most suitable approach.

Those with the more marked accommodative factor and with convergence insufficiency are the most responsive to orthoptic training; cases with divergence excess and non-accommodative cases call for operative cure. Paralytic and dissociated vertical squints are unlikely to be cured by training alone. Cases with moderate anisometropia (up to 3 D.) may respond to training provided amblyopia can be surmounted.

A brief trial over two to three months will reveal best of all which cases are likely to repay extended treatment. During this time some degree of S.M.P. with fusion may be developed and in such cases even unlikely types may do well with training alone. The personal desire for cure and the ability to strive for improvement are also indispensable to success, and much of the art of the orthoptist lies in awakening this interest.

J. E. M. Ayoub.

Paralytic Strabismus

784. Congenital Vertical Motor Pareses.

G. J. EPSTEIN. *Arch. Ophthalm.*, 37, 369-374. March, 1947. 1 fig. 11 refs.

Analysis of the literature of the congenital vertical motor pareses shows that there are different opinions as to which muscles are most frequently involved; the dispute mainly affects the rival claims of the superior rectus and the superior oblique muscle.

Deductions are drawn from the rate of embryological differentiation of the extra-ocular muscles. At the 7 millimetre stage that part of the muscle-mass connected with the 3rd nerve has differentiated whereas that in connection with the 4th and 6th nerve is not present until the 9 millimetre stage is reached. At the 14 millimetre stage, individual muscles are established, but the inferior oblique does not separate from the inferior rectus muscle until the 20 millimetre stage is reached. Still later, at the 55 millimetre stage, the levator palpebrae separates from the superior rectus muscle.

This order of cleavage is thought to have an influence on the congenital defects of the vertical muscles: the later the muscle becomes differentiated the more likely it is to have a congenital defect. Clinical evidence appears to support this view (White and Brown, *Arch. Ophthalm.*, 21, 999-1009. June 1939). In 661 cases of vertical muscle imbalance the superior rectus was involved in 75%, the inferior rectus in 18 %, the inferior oblique in 3% and the superior oblique in 2%.

The author, therefore, concludes that congenital paresis of the superior oblique is probably rare and must be considered an acquired lesion as a result of birth trauma.

B. W. Rycroft.

785. Birth Trauma as Cause of Squint. (Das Geburtstrauma als Ursache des Schielens).

O. HEINONEN. *Acta Ophthalm.* (Copenhagen), 25, 19-28. July, 1947. 22 refs.

Information concerning the course of labour, weight at birth, etc., was collected for 188 infants with squint. The information was obtained partly from case-reports of the lying-in clinic (84 cases) and partly from the parents. The frequency of premature births, anomalies of presentation, different obstetric techniques (forceps, etc.), prolonged labour, the occurrence of twins and mental deficiency are correlated with corresponding frequencies in normal statistical material; finally the weights at birth were compared. The differences in these respects between normal and squinting children are so small as not to be statistically significant. The small number of cases in the different pathological groups has prevented the author from arriving at firm statistical conclusions, but he considers that complications at birth are presumably of importance in the aetiology of squint.

E. Godtfredsen.

786. Unilateral Ophthalmoplegic Migraine of Long Duration.
(Migraine ophtalmique unilatérale d'évolution prolongée.)

L. BONHOMME. *Bull. de la Soc. d'Ophtal. de Paris*, No. 1, 26-29. Jan.-Feb., 1947. 3 figs.

Ophthalmoplegic migraine is described in a boy of 14 years, whose father suffered from migraine and whose brother was asthmatic. The migraine preceded the ocular symptoms in which a hemianopic scotoma was followed by a reduction in central vision and concentric depression of the field of vision. The concentric depression lasted for three weeks. Recovery was rapid to commence with, and slowly improved.

The author sees no reason to doubt that the condition is not of hypophyseal origin. W. J. B. Riddell.

787. Recurrent Paralysis of the Oculomotor Nerve and Ophthalmoplegic Migraine. (Paralysies récidévantes (souvent alternantes) du moteur oculaire commun et migraine ophtalmoplégique).

H. ROGER, J. SÉDAN and DUPLAY. *Rev. d'Oto-Neuro-Ophtal.*, 19, 129-143. April, 1947.

The authors present a study of recurrent IIIrd nerve palsies, based on personal observation of five cases.

During the attack, the third nerve palsy is usually total, in that it involves all the muscles supplied by this nerve, but, on the other hand it is often a paresis rather than a complete paralysis. The patient often did not complain of diplopia since it tended to be masked by the early onset of ptosis. In most cases the paralysis affected both the extrinsic and intrinsic muscles, the pupil on the affected side being dilated and inactive.

The authors discuss the principal associated symptoms, pain and paralysis of other ocular muscles. The pain was usually fronto-temporal, always unilateral, on the same side as the palsy, and typically migrainous in character. In certain cases, however, the pain was limited to the infra-orbital region, and was associated with altered sensibility over the affected area.

The evolution, diagnosis, prognosis, and treatment are discussed.

G. I. Scott.

788. Provoked Diplopias, First Conclusions in Neuro-ophthalmology. (Les diplopias de provocation, leurs premiers résultats en neuro-clinique oculaire.)

J. SÉDAN and S. SÉDAN-BAUBY. *Rev. d'Oto-Neuro-Ophtal.*, 19, 257-276. July, 1947.

"Provoked diplopia," a new technique for the estimation of muscle weakness, was first described the previous month at the *Soc. Ophtal. de Paris*, and is here elaborated with 12 case histories. When a muscle palsy has ceased to be clinically evident, any residual

weakness may be demonstrated by placing a prismatic lens (10° – 40°) before the eye, so orientated as to reproduce the original diplopia; the patient must suffer the resultant diplopia for 15–30 minutes, resisting the desire to close an eye, by which time any attempts to neutralise the diplopia are abolished by fatigue; on withdrawing the lens, there is considerable discomfort and confusion, often not analysed as diplopia until a Maddox-rod test is performed; this secondary or "provoked" diplopia may then be measured, or more readily and as relevantly, the time of the persistence of the diplopia noted, this being proportional to the weakness of the affected muscle.

This "provoked diplopia" can be shown to be unvaried by the insertion of a Maddox-rod, to be in the same direction as the primary "forced" diplopia, and evident only in the axis of the affected muscle; there is no nystagmus, and the status of the accommodation and convergence argues against any hypothetical spasm in its ætiology.

Of the cases reported, the majority are nerve lesions due to syphilis, intracranial tumour or hæmorrhage. There is a IV nerve palsy from staphylococcal lid infection, a diabetic and an influenzal palsy, and the most interesting—a preglaucomatous VI palsy, in which eserine could be given on the onset of diplopia to ward off the attacks of glaucoma.

The method is of value to disclose and study motor weakness from ophthalmoplegias that have become clinically quiescent and observe their progress or regress; to investigate exophorias and the asthenopias occurring without manifest heterophoria but involving diplopia after fatigue; and particularly to demonstrate, as an aid to diagnosis and therapy, an oculomotor affection in a neurological case where none was clinically evident.

P. D. Trevor-Roper.

789. Reciprocal Innervation of the Eyes in Clinical Practice. (*L'innervation oculaire réciproque en clinique*).

A. M. LARMANDE. *Rev. d'Oto-Neuro-Ophthal*, 19, 292–295. July, 1947. 3 figs.

Case report illustrating the clinical importance of reciprocal ocular innervation. A total right III nerve paralysis was caused by head injury, but whereas the right eye was immobile and facing forwards, the left eye was fully mobile and directed outwards.

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the eye from adopting the position natural to the active eye.

P. D. Trevor-Roper.

790. Isolated Oculomotor Palsy Caused by Intracranial Aneurysm.

G. JEFFERSON. *Proc. Roy. Soc. Med.*, 40, 419–432. June, 1947. 4 figs. 3 tables. 39 refs.

This paper is a description of oculomotor palsy associated with intracranial aneurysm based on 55 cases out of a total of 158 cases

of aneurysm within the cranium observed in life. The majority arose from the internal carotid artery after it had penetrated the dura. The essential anatomy of the region is described and reasons are given to show why an aneurysm of the basilar artery rarely causes pressure upon the oculomotor nerve. The most striking feature of the third nerve palsy is ptosis followed by diplopia. Severe pain is characteristic, usually localized to the forehead, the side of the nose and the inner canthus of the same side: it is referred in type and not due to pressure on the trigeminal nerve. Some recovery of the oculomotor palsy often occurs whether the internal carotid is ligatured or not, but the return of function is rarely complete. The majority of these aneurysms were of the so-called congenital type but a small proportion were due to arterio-sclerosis. Angiography is of great value in confirming the diagnosis and establishing the site of the aneurysm; this technique was carried out in 24 cases. Treatment in the majority of cases consisted of ligature of the common carotid or the internal carotid artery in the neck, although methods of occlusion at the site of the aneurysm have also been investigated. In about 8% of patients the circle of Willis is incomplete and for this reason, in order to forestall complications due to cerebral anæmia, a trial compression of the artery in the neck is an essential preliminary to its ligation. The only fatalities occurred when ligature was carried out in the acute stage of subarachnoid hæmorrhage, when the cause of death was thought to be intracerebral bleeding. In this type of case application of a metal clip to the neck of the sac is the method of choice.

A. G. Cross.

791. A Note on the Position of the Eye in a Third Nerve Palsy.

E. WOLFF and E. HEFFERNAN. *Brit. J. Ophthalm.*, 31, 427-248. July, 1947. 1 fig.

Though the generally stated direction of the eye in this palsy is down and out, the superior oblique has no depressor action on the abducted eye so the expected direction should be directly outwards. A case is reported where this was so.

A. Lister.

792. Syndrome of the Sphenoidal Fissure. (Syndrome fruste de la fente sphénoïdale.)

H. ROGER, P. MOUREN and A. ROUSSEL. Soc. d'Oto-Neuro-Ophtal. du Sud-Est, meeting May 31, 1946. Reported in *Rev. d'Oto-Neuro-Ophtal.*, 19, 122. Feb., 1947.

The authors record a case of rapid onset of IIIrd nerve palsy, accompanied by violent infra-orbital neuralgia. The ætiology is discussed.

G. I. Scott.

793. Painful Myoclonic Encephalitis with brief Cervico-Pharyngeal Spasm, Transient Ocular Palsies, and Atrophy of the Tongue. (Encéphalite algomyoclonique à type de spasmes cervico-pharyngés brusques, de parésie des oculo-gyres et d'atrophie linguale).

H. ROGER, J. E. PAILLAS and M. DELAAGE. Soc. d'Oto-Neuro-Ophtal. du Sud-Est, meeting Feb. 22, 1946. Reported in *Rev. d'Oto-Neuro-Ophtal.*, 19, 104-106. Feb., 1947.

The condition described occurred in a young man of seventeen years of age who was first seen with acute tetany. The ocular signs were paresis of the elevators of the eye for voluntary movements, or reflex movements, disturbance of convergence and paralysis of accommodation.

The attacks were characterized by short periods of myoclonus affecting the trapezius, sternomastoids and the diaphragm, as well as the eyes. The patient was unable to speak during the attack, and respiration ceased for a few seconds.

G. I. Scott.

794. Cerebral Beri-Beri (Wernicke's Encephalopathy). H. E. DE WARDENER and B. LENNOX.
Vide abs. 861.

795. Wernicke's Encephalopathy. H. B. BARRIE.
Vide abs. 862.

796. Poliomyelitis. D. BODIAN.
Vide abs. 820.

797. Surgery for Paralysis of the External Rectus.
G. BALDING. *Eye, Ear, Nose and Throat Monthly*, 26, 144-146. March, 1947.
In a review of seven cases the author advises recession of the internal rectus of 5 mm. with transplant of the outer halves of the superior and inferior rectus tendons to the stump of the external rectus which had been resected 12 mm.

J. D. Fraser.

Conjugate Deviations

798. On certain Disturbances in Conjugate Lateral Movements in Parietal Lesions associated with Corporeal Agnosia. (Sur certains troubles de la latéralité du regard dans les lésions pariétales s'accompagnant de troubles de la somatognosie.)
M. DAVID and H. HECAEN. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 103-105. Jan.-Feb., 1947.

Three cases are described of parietal lesions of diverse ætiology in which there was inability to look towards the side of the body not appreciated by consciousness.

Stewart Duke-Elder.

799. Oculogyric Crises in Parkinson's Disease—A Study of the Vestibular Reactions between and during the Attacks. (Crises oculogyres des Parkinsoniens.—Étude des réactions vestibulaires en dehors des crises et pendant les crises.)
J. A. BARRE and BLOCH. *Rev. d'Oto-Neuro-Ophthal.*, 19, 144-152. April, 1947.

The authors describe their observations in four patients suffering from Parkinson's disease.

G. I. Scott.

Nystagmus

800. *Revue de Neurologie*, 1947, 103, 1-10. H. WEINSTEIN.
G. I. BARRE and BLOCH. *Rev. d'Oto-Neuro-Ophthal.*, 19, 144-152. April, 1947.
va. The authors describe their observations in four patients suffering from Parkinson's disease.

P. Weinstein.

801. Marcus Gunn's Syndrome and Voluntary Nystagmus. S. SORIA.
Vide abs. 743.

XXXIII. THE PUPIL AND ITS CENTRAL CONNECTIONS

802. The Potentiating Action of Acetylcholine on that of Adrenaline.
R. J. S. McDOWALL. *J. Physiol.*, 106, 1-7. March 15, 1947. 6 figs. 12 refs.

In this paper the author pursues his previous observation (*J. Physiol.*, 1946, 104, 392) that in certain circumstances acetylcholine may exert a stimulating action on the heart beat. He shows that in the isolated intestine and in the intact anaesthetized animal acetylcholine potentiates the action of adrenaline and is capable of restoring susceptibility in an animal which has been desensitized by repeated injection of adrenaline, this effect being present in the isolated tissue.

Sensitization is widespread, and can be demonstrated in the heart, vessels, pupil, intestine, as well as by the effect on the arterial blood pressure. The author attributes the rapidity of the adrenergic response in "fight or flight" to the maintenance of a parasympathogenic acetylcholine level during resting states.

Alex. Comfort.

803. **Voluntarily Provoked Phenomena under Vegetative Regulation.** (Changes of Heart Frequency and Pupillary Dilatation.) (Willkürliche Auslösung vegetativ gesteuerter Vorgänge. Horzfrequenzänderung und Pupillenerweiterung.)

K. ECKEL. *Klin. Med.*, 2, 383-394. April, 1947.

The case is reported of a medical student who had interested himself in hypnosis, who could voluntarily dilate his pupils to more than twice their normal size for periods lasting up to forty seconds. During the act, accommodation was not affected, respiration was suspended and the pulse rate accelerated. The electrocardiogram showed changes attributable to the mechanical effect of lowering the diaphragm. Other instances and reports of cortical control of vegetative functions are quoted.

H. L.

804. **True Unilateral Argyll Robertson Pupil after Ophthalmic Zona.** ("Vrai" signe d'Argyll-Robertson unilatéral consécutif à une zona ophtalmique.)

P. KISSEL, J. CORDIER and G. DE REN. *Rev. Méd. Nancy*, 72, 173-177. June 15, 1947.

A case of a true A.R. pupil after ophthalmic zona is described; the patient, a man of 70, had no sign of syphilis. Physical examination revealed nothing apart from an abolition of the left ankle-jerk (of unknown origin).

The authors discussing the origin of A.R. pupil in their case, think it has a peripheral origin, either in the myoneural junction or in the amacrine cells of the iris.

S. Vallon.

805. **Tonohaptic Pupillary Reaction in Tapeto-Retinal Degenerations.** (La reazione tonooptica della pupilla nelle degenerazioni tapeto-retiniche.)

G. MORONE. *Arch. di Ottal.*, 51, 1-28. Jan.-Feb.-March, 1947. 4 figs. 41 refs.

According to Lowenstein the tonohaptic pupillary reaction is known to be the expression of an alteration in the higher vegetative centres. This tonohaptic reaction is characterized pupillographically by a prolonged latent period and a rapid contraction to light and by a prolonged latent period for redilatation which also is rapid.

The author studied pupillographically three cases of macular degeneration of the type of Stargardt, two cases of retinitis punctata albescens, six cases of retinitis pigmentosa and one case of the

syndrome of Laurence-Moon-Bardet-Biedt, with a view to investigating any correlation between tapeto-retinal degenerations and alterations of the diencephalic-hypophyseal centres. The tonohaptic reaction could be observed pupillographically only in one case of retinitis pigmentosa. He considers that the lack of a tonohaptic reaction in most of these cases excludes any relationship of cause and effect between the tapeto-retinal degenerations and disturbances in the diencephalic-hypophyseal system.

C. Guiseppe.

XXXIV. THE HIGHER VISUAL PATHWAYS AND CENTRES.

Central Visual Pathways

806. "Arachnoiditis", "Endocraniosis" and "Chiasmatic Arachnoiditis". ("Arachniti", "Endocraniosi" e "Arachnoidite ottico-chiasmatica").

A. RUBINO. *Riv. Oto-Neuro-Oftal.*, 19, 85-102. March-April, 1947. 14 figs. 2 refs.

The interest of the case consists in the association of an evident chiasmatic syndrome resulting from optic arachnoiditis (bilateral optic nerve atrophy and horizontal hemianopia) with the radiological picture of internal hyperostosis. Pneumocisternography confirmed the clinical diagnosis of optic-chiasmatic arachnoiditis showing a large obstruction at the spot where the area of the chiasmatic cistern passes over to the frontal subarachnoidal spaces. Surgical intervention confirmed the presence of a leptomeningeal perichiasmatic inflammatory process and signs of diffuse leptomeningeal inflammation of the cortex.

The case is particularly interesting inasmuch as it confirms clinically and anatomically the existence of a new syndrome of internal hyperostosis associated with arachnoiditis.

After discussing the relationship between these two diseases the author presents a classification of the various forms of optic-chiasmatic arachnoiditis included among the meningo-endocranioses.

G. Cristini.

807. Arachnoiditis involving the Optic Chiasma and an Aneurysm of the Carotid Artery. (Arachnoidite opto-chiasmatiche et anévrisme du siphon carotidien. Présentation de l'opéré).

J. PAILLAS, J. SÉDAN, J. BOUDOURESQUES and J. BONNAL. *Soc. d'Oto-Neuro-Oftal. du Sud-Est*, meeting Feb. 22, 1946. Reported in *Rev. d'Oto-Neuro-Oftal.*, 19, 106. Feb., 1947.

A case is described in which defective vision and primary optic atrophy of the left eye were found to be due to a well-marked arachnoiditis involving the left optic nerve, and covering over an aneurysm of the left carotid artery. Improvement occurred following operation.

G. I. Scott.

808. **Visual Recovery in Two Cases of Pituitary Tumour after Treatment by X-Rays in one case and by Operative Intervention in the other.** (Récupération visuelle après traitement de deux tumeurs hypophysaires, l'une traitée par les rayons X, l'autre par la chirurgie).

A. BRONNER and P. DIEFFENBACH. *Rev. d'Oto-Neuro-Ophtal.*, 19, 213-221. May-June, 1947. 10 figs.

The first case described is that of a female patient, sixty years of age, who had a history of failing vision over a period of two years. When first examined, she had marked impairment of vision and X-ray examination revealed gross destruction in the region of the sella turcica. Intensive X-ray therapy was followed by a still further decrease in visual acuity, after which the visual fields remained practically unchanged for a period of nine months. Subsequent to this, however, perimetric examination revealed definite improvement in the visual fields, and this enabled a better prognosis to be given in spite of the fact that the visual acuity still remained unchanged. Marked improvement took place during the following years.

The second patient was a young man, of thirty-three years of age, first seen four to five months after he noticed his vision becoming affected. A pituitary adenoma was removed, and within fifteen days the patient had recovered practically a full field, and almost normal visual acuity.

The authors record these cases as demonstrating :—

(1) that recovery may be long-delayed following X-ray therapy, and that perimetric examination is of great value as a guide to prognosis and (2) the dramatic recovery which can take place following operation carried-out at an early stage in the disease.

G. I. Scott.

809. **The Sella Turcica and the Pituitary Gland.** (Sella turcica and Hypophyse.) H. MARX, W. HESSE, and H. NEUMANN. *Klin. Wchschr.*, 24/25, 299-304. Feb. 15, 1947. 2 figs.

A very thorough investigation was carried out on 390 patients (100 children aged 1 to 16, and 290 adults) to discover any relation between the volume of the sella turcica and the size of the pituitary gland (P.G.) and whether the size of the P.G. gives any clue as to the state of its function. The sellar volume was assessed by means of lateral radiographs of the skull showing the silhouetted outlines of the sella. In 90 of these cases the P.G. was also available for direct anatomical study.

The author concludes that, with the exception of tumours, X-ray examination of the sella turcica gives no evidence of the size and function of the pituitary gland.

V. C. Medvei : *B.M.A.* (abridged).

810. **Sudden Transitory Blindness in the Course of the Evolution of Pituitary Tumour.** (Cécité brusque et transitoire au cours de l'évolution d'une tumeur de l'hypophyse.)

DETROY and LESENNE. *Bull. de la Soc. d'Ophtal. de Paris*, No. 1, 17-19. Jan.-Feb., 1947.

A case is described which developed sudden and complete blindness. After some days an appreciable amount of vision returned which remained for some years. The author suggests that the cause of the visual loss was an acute bilateral retro-bulbar neuritis.

Stewart Duke-Elder.

811. Chromophobe Adenoma. S. L. SIMPSON and A. D. 40, 151. Feb., 1947.
The patient at the age of 40 and blindness of the right eye with optic atrophy. The left eye showed ptosis, partial optic atrophy, and partial temporal hemianopia. The pituitary fossa was enlarged (19 x 21 mm.). After operation full motility returned to the left eye and partial to the right.

A. J. B. Goldsmith.

812. Complete Removal of Craniopharyngioma with Recovery from Blindness.

W. T. GRANT. *Bull. Los Angeles Neurol. Soc.*, 12, 53-58. March, 1947. 4 figs. 3 refs.

Report of a case. A two-year-old boy showed progressive failure of vision which began 4 days after a mild head injury, and became complete after 12 days. There was no optic atrophy and straight X-rays gave no information. Ventriculography showed a mass indenting the floor of the third ventricle. At operation, 3 weeks after the boy became blind, a suprasellar cystic tumour was removed after dividing the right optic nerve. The left eye recovered pupillary reaction to light 2 days after operation and subsequent visual recovery is said to have been good.

There was no evidence of recent hæmorrhage into the cyst and it is suggested that trauma tore arachnoid adhesions, allowing expansion of the cyst to take place.

A. J. B. Goldsmith.

813. Apparent Blindness in the Newborn with Grey Pseudo-atrophy of the Optic Nerve. BEAUVIEUX.

Vide abs. 605.

814. Wernicke's Encephalopathy. H. B. BARRIE.

Vide abs. 862.

815. Cerebral Beri-Beri (Wernicke's Encephalopathy). H. E. DE WARDENER and B. LENNOX.

Vide abs. 861.

Higher Visual Centres

816. Mirror Writing. (Escrita ao espelho).

CYRO DE REZENDE. *Arq. Brasil. de Ofal.*, 10, 20-31. 1947. 1 illustration. 16 refs.

The author points out that this anomaly consists of a total inversion of each letter which makes up the word, so that by placing the writing in front of the mirror it can be easily read. An historical summary is given. One case history of an 8-year-old child is presented.

Moucyr Alvaro.

817. Hysterical Amaurosis. (Amaurose Histérica.)

E. PINHO. *Arq. Brasil. de Ofal.*, 10, 16-19. 1947. 4 refs.

A case history is presented of a 19-year-old girl who became suddenly blind in the right eye and with the left counted fingers at one metre. Globe and adnexa normal. The personal history was one of shock after the imprisonment of her husband. Psychiatric treatment was carried out, mock operations being performed by her

ophthalmologist who explained the "treatment" in detail, but results were poor. Four months later she was examined again. Visual acuity in both eyes: 1/10 at 5 metres. When her husband returned home her vision became normal.

Moacyr Alvaro.

818. An Unusual Case of Blindness and Deafness. (Un cas singulier de cécité et de surdité).

M. BAILLIART. *Bull. de la Soc. d'Ophthal. de Paris*, No. 1, 57. Jan.-Feb., 1947.

A young girl on entering a convent became blind and deaf. The case was considered to be one of hysteria.

Stewart Duke-Elder.

XXXV. OPHTHALMIC ASPECTS OF OTHER CENTRAL NERVOUS DISEASES.

819. Waren Tay-Sachs Disease in a Chinese Infant.

G. HARIDAS. *Brit. J. Ophthal.*, 31, 428-436, July, 1947. 1 fig. 15 refs.

The author describes a typical case of Tay-Sachs' disease occurring in a Chinese infant and complicated by an increasing hydrocephalus. The ætiology and the pathology of this disease are recapitulated briefly and the relationship between amaurotic family idiocy and Niemann-Pick disease is discussed.

Desmond Douglas.

820. Poliomyelitis.

D. BODIAN. *J. Amer. Med. Assoc.*, 134, 1148-1154. Aug., 2, 1947.

An extensive histopathologic survey of 24 fatal human cases of poliomyelitis confirms older accounts in showing that all victims of poliomyelitis have lesions in the brain and that the severest lesions occur in the brain-stem rather than in the cerebral cortex. Moreover, great variation occurs in the severity of pathological involvement of most centres of the central nervous system, but the same centres are generally involved in greater or lesser degree in almost all cases.

Nuclear paralysis of the third cranial nerve occurred in 11 of the 24 cases, in one case complete and severe, in 5 moderately so and in 5 mild. 23 out of the 24 had lesions in the seventh nucleus.

The author's observations indicate that most nerve cells either are destroyed during the acute stage of a poliomyelitic infection or largely recover their normal appearance in about one month or less. Such recovery of reversibly injured lower motor neurons may be a primary factor in the early restoration of muscle function.

Stewart Duke-Elder.

821. Thrombosis of the Cavernous Sinus.

S. L. FOX and G. B. WEST. *J. Amer. Med. Assoc.*, 134, 1452-1456. Aug. 23, 1947. 14 refs.

Three cases of cavernous sinus thrombosis are reported, 2 with unilateral involvement and 1 with bilateral involvement, with 2 recoveries. In the first case the condition was unilateral and was thought to follow adeno-tonsillectomy. The patient died in spite of

the administration of sulphadiazine sodium intravenously and penicillin intramuscularly. The second case followed dental extraction with probable secondary sinusitis and was complicated by meningitis. The involvement of the cavernous sinus remained unilateral. The patient showed little response to penicillin given intramuscularly and intrathecally and to sulphadiazine taken orally. Intravenous sulphapyridine sodium was substituted for oral sulphadiazine, and the patient showed immediate improvement with ultimate recovery. The third case was believed to follow a gumma of the nasal septum with secondary infection in a person with uncontrolled diabetes. Treatment consisted of penicillin given intramuscularly and sulphadiazine and dicumarol orally. Although the condition became bilateral the patient recovered, but total blindness resulted.

The prognosis is still grave in spite of advances in the use of chemotherapy, anticoagulants and antibiotic agents.

Stewart Duke-Elder.

822. The Ocular Signs in Nervous Syphilis. (Les manifestations oculaires dans la syphilis des centres nerveux)

P. BONNET and J. L. BONNET. *J. Méd. Lyon*, No 658, 409-432 June 5, 1947

In a very good paper written for the internist, the authors analyse the pathologie lesions of syphilis of the central nervous system (cerebral syphilis, tabes and G P I), and the ocular reactions which may occur oculomotor paralysis, pupillary anomalies and optic nerve defects

S. Vallon

(Aspects et diagnostic

June 5, 1947.

The authors show photo-

graphs of fundi with papilloedema of different origins

S. Vallon

824 Syphilitic Meningitis with Papilloedema. (Les méningites syphilitiques avec stase papillaire)

S. DAUM and R. HOUDART *Presse Méd.*, No 42, 479-480 July 19, 1947

Syphilitic meningitis may produce intra-cranial hypertension in the presence of arachnoiditis or serous meningitis. In these cases medical treatment can be tried as long as the papilloedema decreases, but in the absence of improvement or if there is recurrence of edema, surgical treatment is indicated.

S. Vallon.

825. The Gradenigo-Lannois Syndrome produced by Osteitis of the Apex of the Petrous Bone and an Extra-dural Abscess. Cure after Operation. (Syndrome de Gradenigo-Lannois par ostéite péto-apexienne et abcès extra-dural, intervention, guérison)

G. AYMES, AZALBERT and P. JOUBERT. *Soc. d'Oto-Neuro-Ophtal. du Sud-Est*, meeting March 22, 1946. Reported in *Rev. d'Oto-Neuro-Ophtal.*, 19, 110-113. Feb., 1947. 5 refs.

A case is described and the aetiology, pathology, diagnosis and treatment are discussed. The authors are of the opinion that the presence of the syndrome is an indication for radical operation, even although X-ray examination may be negative.

[G. I. Scott.

826. Lowering of Intra-ocular Tension following Muscular Fatigue. J. SÉDAN]

Vide abs. 508]

827. Blepharospasm and Commencing Facial Hemispasm associated with Spasm of the Palate and Abnormal Movements of the Left Limbs. H. ROGER and J. PELLEGRIN.

Vide abs. 745.

828. Isolated Oculomotor Palsy Caused by Intracranial Aneurysm. G. JEFFERSON.
Vide abs. 790.
829. Painful Myoclonic Encephalitis with brief Cervico-pharyngeal Spasm, transient Ocular Palses, and Atrophy of the Tongue. H. ROGER, J. E. PAILLAS and M. DELAAGE.
Vide abs. 793.
830. Arachnoiditis involving the Optic Chiasma and an Aneurysm of the Carotid Artery. J. PAILLAS, J. SÉDAN, J. BOURDOURESQUES and J. BONNAL.
Vide abs. 807.
831. Neurotrophic Keratitis following Alcohol Injection into the Gasserian Ganglion. E. SINAI.
Vide abs. 664.

XXXVI. OPHTHALMIC ASPECTS OF SYSTEMIC DISEASES

832. Dermatomyositis.

D. L. DEY. *Med. J. Australia*, 1, 553-557. May 3, 1947. 2 refs.

This disease is defined as "an acute, subacute or chronic disease of unknown origin, characterized generally by a gradual onset with vague or indefinite prodromata, followed by œdema, dermatitis and multiple non-suppurative muscle inflammation." The most constant and characteristic feature of the condition is a heliotrope discoloration of the upper eyelids, which may have a "bats-wing" distribution over the nose and cheeks; in its absence the diagnosis must be in doubt.

A fatal case is described in full clinical detail, and the autopsy report is appended.

A. J. B. Goldsmith.

833. Some Clinical Observations on the Present Outbreak of Acute Poliomyelitis.

W. H. KELLEHER. *Brit. Med. J.*, 2, 291-295. 1947.

In 66 cases in the epidemic of acute poliomyelitis at present in London, the author found the following ocular complications due to lesions in the brain-stem—3 of oculomotor palsy (double vision), 3 of nystagmus, 2 of inequality of the pupils and 5 of facial paralysis.

Stewart Duke-Elder.

834. Herpes Zoster with Exophthalmos. (In Hungarian.)

A. KAHAN. 8th Scient. Meeting Hungarian Ophthal. Soc., Dec. 14, 1946 Reported in *Orvosok Lapja* (Hungarian Med. J.), 3, 389. March, 1947.

In a case of herpes zoster, hæmorrhagic perineuritis and orbital hæmorrhagic inflammation caused an exophthalmos. In the literature six similar cases have been recorded.

P. Weinstein.

835. Further Observations on Dental Defects in Infants Subsequent to Maternal Rubella during Pregnancy. M. W. EVANS.

Vide abs. 706.

836. Implication of the Conjunctiva in Varicella. M. E. AUBINEAU.

Vide abs. 641.

837. Rubella during Pregnancy and Congenital Anomalies. H. GRONVALL and P. SELANDER.

Vide abs. 603.

838. Morhus Reiteri. M. ZEWI.

Vide abs. 633.

839. True Unilateral Argyll Robertson Pupil after Ophthalmic Zona.
P. KISSEL, J. CORDIER and G. DE REN.
Vide abs. 804.
840. The Presumed Appearance of Opacities in the Lens associated with Cooley's Disease. (*Sulla presunta comparsa di opacità del cristallino legate a morbo di Cooley.*)
D. PANZARDI. *Boll. d'Ocul.*, 26, 189-192. March, 1947. 3 refs
The author examined nine cases of Cooley's disease with the slit-lamp. In his opinion the cataract described in this disease is a mere chance association
G. Cristini.
841. Ocular Manifestations of Erythema Nodosum. (Le manifestazioni oculari nel corso dell'eritema nodoso)
G. F. CASARI. *Rass. I.*
After a review of the three cases in which ocular lesions were observed, the author concludes that the disease is of allergic origin, or para-allergy may be involved, the last being perhaps the most satisfactory and comprehensive interpretation; some cases, however, are very difficult to explain. Stress is laid on the ocular symptoms which may remain isolated or precede the manifestations of the disease in the skin and mucous membranes.
N. Pagharani.
842. Paralysis of Accommodation as the presenting feature in cases of Botulism. (*Paralysie de l'accommodation révélatrice d'un botulisme fruste familial.*)
H. ROGER. *Soc. d'Opht.*, 1947. Sud-Est, meeting Feb. 22, 1946. Reported 1947.
In which botulism produced no symptoms
Recovery took place in about three weeks.
G. I. Scott.
843. Blindness after Barbiturate Poisoning. A. FRANCESCHETTI and M. DORET.
Vide abs. 510.
844. Observations on the Retinal Circulation during Convulsive Attacks Produced by Tetraxol Pentamethylene. LAMARCHE and COHEN-BOULANIA.
Vide abs. 509.
845. Ocular and Systemic Manifestations of a Cholinergic Episode following Nitrous Oxide Anesthesia.
R. D. BARNARD. *Eye Ear Nose and Throat J.*, 26, 1947.
The patient, a young man, had a cholinergic episode, petechial hemorrhages and aseptic fever. At the end of two years the first estimation of blood cholinesterase was noted to be low. Following successful treatment with atropine, the level rose, then discovered, this level rose with a recurrence of the episode. Transient micropsia at the time of the convulsion. The episode was of cholinergic origin, and enophthalmos during the succeeding period.
J. D. Fraser.
846. The Ocular Reactions in the Course of Shock Therapy in Neuropsychiatry, in particular in the Course of Electro-Shock. (*Les réactions oculaires au cours des thérapeutiques de choc en neuropsychiatrie et en particulier au cours de l'électrochoc.*)
J. LEROY. *Ann. d'Ocul.*, 180, 342-359. June, 1947. 2 tables. 32 refs.
The motor reaction of electro-shock therapy has been divided into:—(1) Spasm during the passage of the electric current with

828. Isolated Oculomotor Palsy Caused by Intracranial Aneurysm. G. JEFFERSON.
Vide abs. 790.
829. Painful Myoclonic Encephalitis with brief Cervico-pharyngeal Spasm, transient Ocular Palsies, and Atrophy of the Tongue. H. ROGER, J. E. PAILLAS and M. DELAAGE.
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Vide abs. 603.

838. Morbus Reiteri. M. ZEWI.

Vide abs. 633.

The extreme rarity of retinopathies in children is confirmed, none having been recorded previously under the age of 10: retinal hæmorrhages are considered as one of the earliest diabetic manifestations, being proportional to the duration of the disease and not related to the vascular sclerosis or hypertension which they precede: the minute globular aneurysms are possibly the earliest pathognomonic signs.

Albuminuria occurred in only four of the series; of these, three had retinopathy or cataract, a more striking association than that usually quoted.

Cataract has been quoted (Waite and Beetham) as occurring in 4% juvenile diabetics, of which half had poorly controlled diabetes; only one child in this series was so affected.

P. D. Trevor-Roper.

854. N. F. I. 1947.
A type of retinopathy in which the fundus was normal and scalp with a defect in the skull demonstrated by palpation. There were frequent twitchings and deviation of the eyes to the right.

Stewart Duke-Elder.

855. Ectasia. (Deux nouveaux signes)
Le poulx et le clignement palpébral

I. RAFI May 29, 1947
The importance in the cardiopathies
mention a pulse in the lids and a rhythmic palpation.
S. Vallon.

856. Intra-ocular Hæmorrhage in Cataract Extraction. W. C. OWENS and W. F. HUGHES.
Vide abs 712.

857. of a Pathological Cataract with
of Familial Origin. (Hémorragie du
pathologique avec symptômes
dystrophiques surtout myopathiques, de caractère familial)
CH THOMAS MICHON, HERBEUVAL, FAIVRE and CH HENRY. *Rev Méd Nancy*, 72,

Steinart's disease). A sudden hæmorrhage with no obvious cause, was assumed by the authors to be of endocrine origin.

S. Vallon.

858. A Contribution to our Knowledge of Nutritional Amblyopia or "Camp Eye". (Bijdrage tot de kennis van de deficiëntie-amblyopie "kampooogen").

H. G. MOORREES. *Thesis, University of Utrecht.* 1947.

After a general review of the occurrence of retrobulbar neuritis in deficiency diseases the author—who was a prisoner of war in the Dutch East Indies during the Japanese occupation—gives a review of the symptoms noticed among patients suffering from so-called "camp eyes" in the "Jaarmarkt kamp" of Surabaya. "Camp

generalized contracture, loss of consciousness and apnœa. (2) Pre-convulsive stage (10 seconds). (3) Tonic and clonic convulsions. (4) Stertorous phase with noisy breathing and neuro-vegetative phenomena. (5) The recovery and awakening stage.

The following ocular changes may be noted :—(a) Mydriasis in 69% of cases. (b) Raised tension in 68% of cases. (c) Raised pressure in the retinal arteries and cerebrospinal fluid. (d) Increase in lacrimal secretion. (e) Vasomotor changes. (f) Motor reactions comparable to the rest of the organism.

In insulin shock the results are more variable; ocular hypotension may occur. In shock from cardiazol there is little difference from electro-shock, save for the anxiety and various unpleasant sensory phenomena.

L. H. Savin

847. Primary Malignant Exophthalmos, a Case Operated on by Naffziger's Method. J. H. VOGT and A. TORKILDSEN.

Vide abs. 764.

848. Pituitary Infantilism with Toxic Goitre.

A. W. SPENCE. *Proc. Roy. Soc. Med.*, 40, 151-152. Feb, 1947.

The case which is reported, a woman of 23, showed exophthalmos with lid retraction and slight lid lag; she had a B.M.R. of + 33 per cent.

A. J. B. Goldsmith.

849. Hyperophthalmopathic Syndrome in Thyroid Disease. K. E. PASCHKIS and A. CANTAROW.

Vide abs. 763.

850. Two Cases of Dystrophia Adiposo-genitalis with Ocular Symptoms.

E. SINAI. Tel-Aviv Branch, Palestine Jewish Med. Assoc., Dec., 1946. Reported in *Harfuah*, 32, 140-141. April, 1947.

1. Girl of 10½ years, weighing 54 kg. 3½ years ago parenchymatous keratitis, W.R. positive. No changes in sella turcica.

2. Girl of 7 years, weighing 22 kg. Polydactylia (of hands and feet) and retinitis pigmentosa. One brother presents the same symptoms.

Mitterstein.

851. Thyrotoxicosis in a Child aged 2 Years, 9 Months.

G. SLOT. *Proc. Roy. Soc. Med.*, 40, 159-160. Feb., 1947.

This girl showed "all eye signs for exophthalmos," and improved on treatment with methyl thiouracil.

A. J. B. Goldsmith.

852. Fundus Oculi as an Indicator of Vascular Damage in Diabetes Mellitus. H. DOLGER.

Vide abs. 687.

853. Ocular Findings in One Hundred and Twenty Eight Juvenile Diabetics.

I. GIVNER and C. LODYJENSKY. *N.Y. State J. Med.*, 47, 1371-1372. June 15, 1947. 1 table. 9 refs.

Routine ophthalmoscopic examination of 128 diabetic children showed hæmorrhages in 3 and incipient diabetic cataract in 1; none had visual complaints; all four were aged 12-15 and had had diabetes for 7-11 years; 3 had albuminuria, and of the three with hæmorrhages, two showed aneurysmal dilatations also of paramacular capillaries.

one was moderately improved, the other became worse. Improvement occurred in 78% of all patients in the series, 13% were unchanged and 8.7% worse.

The authors consider that there are other ætiologic factors in addition to the deficiency in Vitamin B₁ or the Vitamin-B complex. The population, even before the war, showed a high incidence of nerve degeneration (although not the optic nerve) from toxic or poor nutritional conditions, this neurodystrophic process increased under war conditions mainly due to dietary insufficiency and hypovitaminosis, added to which there was the emotional stress of war, focal infection, tobacco, alcohol and other diseases.

A. G. Leigh.

860. Deficiency Symptoms in Prisoners of War. (Deficientie verschijnselen bij krögsgevangenen).

J. F. DE WIJN. Thesis, University of Utrecht. 1947.

The author, who was himself a prisoner of war in the Dutch East Indies during the Japanese occupation, deals in this thesis extensively with the deficiency symptoms observed in the inhabitants of the Japanese prison camps. His thesis includes a consideration of "camp eyes" of considerable ophthalmic interest. This syndrome he considers a symptom of "pellagra sine pellagra."

J. ten Doesschate.

861. Cerebral Beri-beri (Wernicke's Encephalopathy).

H. E. DE WARDENER and B. LENNOX. *Lancet*, 252, 11-17. Jan. 4, 1947. 4 figs. 24 refs.

Fifty-two cases of Wernicke's encephalopathy are described occurring in a Japanese prisoner-of-war camp in Singapore. The early clinical signs were anorexia, vomiting, nystagmus and emotional changes; then followed gross mental and eye changes, essentially nystagmus and nuclear ophthalmoplegia. Nystagmus was a constant early sign and proved diagnostically valuable; it disappeared in the later stages with the onset of ophthalmoplegia. Horizontal and vertical varieties were seen, though the horizontal was far the commoner; with slow coarse movements a rotatory element was sometimes found. At first nystagmus could only be elicited on lateral movements of the eyes half-way from the mid-line, but as it became more pronounced it could be elicited instantly on deviation from the centre. In some severe cases there was a continuous fine rapid nystagmus on looking straight ahead, which was extremely unpleasant for the patient. Unilateral or bilateral fatigues or palsies of the external recti nearly always followed nystagmus. If, after repeated side to side movements, the eyes were then fixed to the side, the eye looking outwards would hold its position momentarily and then slowly swing inwards. Complete ophthalmoplegia was seen in only one fatal case as a terminal sign. Constriction was the

only pupil abnormality found, and reaction to light and accommodation continued normal. Only a few patients had their ocular fundi examined; 1 showed small flame-shaped retinal hæmorrhages, and 2 early papillœdema with pinkness and blurring of the edges of the disc. The eye changes can be classified as follows:

	No. of cases
Nystagmus	52 (100%)
External rectus fatigue and paralysis ...	14 (26%)
Complete disconjugate wandering ...	4 (8%)
Loss of visual acuity	2 (4%)
Papillœdema	2 (4%)
Pupil abnormalities	2 (4%)
Ptosis	1 (2%)
Complete ophthalmoplegia	1 (2%)
Retinal hæmorrhages	1 (2%)

Twenty-one cases were fatal, and 16 brains became available for macroscopical necropsy. Congestion and hæmorrhages in the corpora mammillaria and peri-aqueductal grey matter were seen.

Early treatment with thiamine injections was found to cure the condition rapidly and completely. The authors conclude that Wernicke's encephalopathy is caused by acute, and beri-beri usually by a more chronic thiamine deficiency.

Stewart Duke-Elder.

862. Wernicke's Encephalopathy.

H. B. BARRIE. *Lancet*, 253, 278-279. Aug. 23, 1947. 8 refs.

Three cases of Wernicke's encephalopathy are described which came to necropsy, two due to pyloric stenosis and one to gastric carcinoma. The post-mortem findings showed numerous red petechiæ with glial reaction in the upper half of the floor of the fourth ventricle extending round the Sylvian aqueduct and to some depth in the walls of the third ventricle.

The author points out the relation of thiamine deficiency to this disease in cases of alcoholic gastritis, carcinoma of the stomach or pyloric stenosis. The ophthalmoplegia so commonly associated with the encephalopathy frequently responds to treatment with vitamin B₁, but without treatment the disease is usually rapidly fatal.

Stewart Duke-Elder.

863. Relation between Sjögren's Disease, the Plummer-Vinson Syndrome and Ariboflavinosis. E. GODTFREDSEN.

Vide abs. 750.

864. A Neuro-vascular Syndrome related to Vitamin Deficiency. H. SMITSKAMP.

Vide abs. 698.

865. Investigations on the Pathogenesis of Quinine Amblyopia. (Investigaciones patogénicas sobre ambliopía quínica.)

G. M. CAMINERO. *Arch. Soc. Oftal. Hispano-Amer.*, 7, 360-366. April, 1947.

The author is ophthalmologist to the Military Hospital at Ceuta, and during 1941-1943 saw many cases of malaria, amongst which

he found nine cases of quinine amblyopia. He had hoped to collect a series of such cases, but unfortunately anti-malarial measures have been so effective that the disease has practically disappeared in this region.

All his cases presented the same appearance of anæmia, pale conjunctivæ, moderately dilated pupils with loss of vision and a history of taking quinine for malaria. The first retinal signs were œdema with blurring of the disc margin. This œdema rapidly absorbed leaving narrowing of the vessels and pallor of the disc; one case had profuse retinal hæmorrhages. Concentric contraction of the visual fields paralleled the loss of visual acuity. Inversion of the fields for colours could not be proved and in some cases the vision was so poor and the colour sense so disturbed that no accurate fields could be obtained. In all cases there was a diminution of light sense, and delay in dark and light adaption.

All cases have been observed during a period of two years following the attack and although the vision recovered more or less completely, a slight loss of visual fields persisted.

Treatment was varied in different cases; in some acetyl choline, strychnine and large doses of fluids were given, in others nicotinic and ascorbic acids.

The author points out that quinine amblyopia has occurred in cases which were not malarial but in which large doses of quinine were given, whereas in the author's cases of malaria as little as one gram of quinine gave rise to amblyopia. Moreover, in cases which are quinine-sensitive and non-malarial or who have had large doses of quinine for other diseases, the author has never seen an attack of amblyopia. In his opinion the malaria makes the patient more sensitive to quinine.

The author has studied the excretion of quinine in the urine in normal individuals and in malarial cases. In these quinine begins to be eliminated within six hours and elimination is complete in three days. In three cases of malaria with amblyopia excretion was normal, in two more it was retarded and in two others markedly so.

The author regrets the paucity of his material and the fact that he has not had the opportunity to study the liver function and the blood changes in these cases, both of which he thinks may be of importance.

E. E. Cass.

866. An Account of certain Ocular Disturbances which may occur in Smokers of "Ersatz" Tobaccos. (A propos de certains accidents oculaires chez des fumeurs d'"ersatz").
J. SÉDAN. *Rev. d'Oto-Neuro-Ophthal.*, 19, 65-71. Feb., 1947.
Sédan describes certain toxic effects produced by "Ersatz" tobaccos, and noticed by him in occupied France during 1941 and later years.

Smokers of "tabac vert" and of tobacco made from potato leaves, developed retinal hæmorrhages after prolonged and heavy smoking. In addition, almost all the cases showed subconjunctival ecchymoses, as well as lack of appetite, nausea and headache. All these signs and symptoms disappeared on ceasing to smoke.

In 1942 certain patients were seen with toxic effects caused by smoking a tobacco called "National," and, in this case intense spasm of accommodation, as well as giddiness, nausea and lack of appetite, was produced. Return to normal occurred three to four days after smoking was stopped.

Sédan discusses the ætiology and ascribes the toxic effects to solanine or solanidine which are liberated by combustion, and accumulate in the part of the cigarette not smoked; patients often said, in fact, that they threw away the last piece of the cigarette. The "National" tobacco, as well of course as that made from potato leaves, was found to be rich in solanine.

The author also records certain toxic effects noted in heavy smokers of certain American opiate tobaccos. The effects were retinal angiospasm and subconjunctival hæmorrhages. In some cases, there were attacks of intense headache and sudden hemianopia of a migrainous nature.

G. I. Scott.

XXXVII. SOCIAL, HYGIENIC, GEOGRAPHICAL AND STATISTICAL OPHTHALMOLOGY

867. Blindness in Childhood—Past Achievements and Present Problems.

A. SORSBY. *J.R. Inst. Publ. Hlth. Hyg.*, 10, 162-172. May, 1947. 2 refs.

A review of incidence, causes, past achievements and current problems. The problem today has shifted from ophthalmia neonatorum to congenital anomalies and hereditary defects; these are briefly discussed under the general headings of malformations, abiotrophies, phakomatoses, neoplasms, lipid dystrophies, intra-uterine infections (rubella and toxoplasmosis), birth trauma, and prematurity (retrolental fibroplasia).

A. J. B. Goldsmith.

868. The Blind.

G. FARRELL. *Social Wk. Yearbook*, 9, 56-61. 1947. 18 refs.

This review of the social aspects of blindness emphasizes a summary of legal provisions for the education and rehabilitation of the blind.

C. M. Louttit, *Psychol Abs.*

869. Braille Edition of the Minnesota Multiphasic Personality Inventory for Use with the Blind.

O. H. CROSS. *J. Appl. Psychol.*, 31, 189-198. 1947.

This adaptation of the unabridged MMPI for use with the blind was printed in grade one-and-a-half braille and administered to 50 blind people (25 of each sex), who were divided into two groups on the basis of age. Profile comparisons and item analyses

indicate that the inventory probably yields valid results when used with the blind; groups were significantly of these did the males and be no greater among the blind than among the seeing, even though the males deviated to a marked degree on the depression, hypomania, psychasthenia, and masculinity-femininity scales.

H. Hill, *Psychol. Abs.*

XXXVIII. INDUSTRIAL & OCCUPATIONAL OPHTHALMOLOGY, ILLUMINATION, ETC.

Industrial

870. The Ophthalmologist and the Industrial Medical Director. J. S. FELTON. *Trans. Amer. Acad. Ophthal. and Otolary.*, 52, 222-229. Jan.-Feb., 1947. 6 figs. 6 refs.

As well as incorporating into its pattern the good features of war-time production, industry is now using proven ways of bettering the health of the worker, but owing to professional misunderstandings the full utilization of visual knowledge is not always possible in present-day plants. It is the hope of industrial doctors to demonstrate to the ophthalmologist the advantages of his participation in the industrial medical programme and to underline his need there. The ophthalmologist hesitates to enter industry because he knows little of its workings, does not understand the mission of the medical director and, most important, he is doubtful of the ethics of such a step. There is unequalled opportunity for the ophthalmologist in industry if only his need can be demonstrated. Plant management has shown a desire for his services as for any measure affecting hourly production, rejected work, the absentee rate, etc.

The worker is seen in three phases by the industrial health services—as the prospective employee, the employee in health and as the sick employee.

The prospective employee. Pre-employment survey consists of a physical examination, rodiagnostic test, urine analysis, classifying against the prospective job. Part of which in progressive plants consists of nt. The actual visual tests are: visual near; results of these tests are matched against the visual skills are used where they will serve him and the management best. Co-operation between the medical and personnel directors and the ophthalmologist is necessary to the inside job. requiring

The employee in health. Once the applicant has been accepted, follow-up surveys are planned. Employees exist who have been in industry for many years and who have never been surveyed. The astute ophthalmologist will seek them out to detect pathological concomitants of the ageing process. Morbid conditions will be corrected if

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possible and a change of job effected if necessary. Thus the industrial ophthalmologist fulfils his function of reinstating the worker in society and making him a useful and happy individual.

Industry carries with it hazards to the worker. The ophthalmologist must know the toxins to which he is exposed and the effects they produce as in contact dermatitis, glassblowers' cataract and the effects of ultra-violet light. Examples of industrial eye irritants and the effects they produce are: Amyl nitrate—corneal necrosis, aniline dyes—chemosis and keratoconjunctivitis, beryllium—keratitis, carbon disulphide—cataract, lead—optic neuritis, methyl acetate—loss of central vision, tar—corneal ulcers, trichlorethylene—keratitis, amaurosis and optic atrophy.

Research on the toxicity of new chemicals is needed and there is much to be done on the preventive side. The maintenance of visual health is further assisted by the study of illumination, the correct use of colour. Only the ophthalmologist can perform the patient propaganda on ocular hygiene which is so necessary.

The sick employee. Current statistics show that occupational eye injuries involving compensation are occurring at a rate of over 16,000 a year. Chief causes of eye injuries in the order of frequency are: flying objects, especially those set in motion by hand tools, abrasive wheels giving rise to small flying particles, corrosive substances, injurious light or heat rays, and poisonous dust or fumes.

Injury cases are usually referred to the consulting ophthalmologist by the plant medical director. Here one of the main points of this discussion arises. Up to now the consultant has confined his attention mainly to injuries and has practically never been at the plant from which his patients come. An acquaintance with the workings of industry is obligatory for in the near future managements will require more from their eye programme than the care of injuries. It is up to the ophthalmologist to make the approach. Initial liaison can be made with the medical director who in most cases has direct access to top management. Management has power to authorise a full eye conservation programme and if this is prepared by the ophthalmologist and endorsed by the medical director it is likely to be accepted.

At the moment the services which comprise the full eye programme are being carried out by safety engineering personnel and by optometrists. The present trend is for the further use of these people as their work has been completely satisfactory, but the very best care and prevention is the function of the ophthalmologist. Management needs his opinion in medico-legal problems, in the establishment of insurance rates and in guiding employment and placement policies. Furthermore it is to his advantage to participate since it is a fact that with the establishment of a vision conservation programme the employee learns to appreciate the value of ophthalmic services and he and his family will later consult the industrial ophthalmologist about their non-occupational difficulties. The industrial ophthalmologist can also aid immeasurably by increasing the teaching in this subject in medical schools.

Desmond Douglas.

871. The Specification of Illumination and Colour in Industry.

F. BIRREN. *Trans. Amer. Acad. Ophthal. and Otolary.*, 52, 242-251. Jan.-Feb., 1947. 5 figs.

This paper is based on experience in industry rather than on theoretical premises. Birren complains that in recent years illumination and colour have been studied extensively by ophthalmologists, light authorities and colour experts, but the literature developed by them has been unsatisfactory on account of awkward terminology and the disregard of physical and psychological factors. Illumination has been confused with brightness, and both with the anomalies of vision.

He maintains that visual fatigue is reduced to a minimum when the entire field of view has approximately the same luminosity as that to which the fovea is adapted. Thus severe contrasts and glare

towards the revision of scoring keys, instructions, and terminology (of such tests as laymen can administer), if tests are to gain the greatest favour. As a step in this direction, revised instructions and scoring keys pertaining to the *Seventh Complete Edition of the Ishihara Test for Color Blindness* are presented. Through a few changes (omissions and renumbering) these instructions can be adapted to other editions of the test.

H. Hill, *Psychol. Abs.*

874. Colour Vision Testing in School Children. J. SCULLY.

Vide abs. 547.

875. Luckiesh and Moss on Reading Illumination.

A. C. HOFFMAN. *J. Appl. Psychol.*, 31, 44-53. 1947.

The conclusions of Luckiesh and Moss concerning the optimal intensity of illumination for reading are criticized on several bases. Adoption of the percentage score technique for handling and presenting findings is questioned, and the results of several experiments (Luckiesh and Moss) are reinterpreted in terms of the differences between means. Nervous muscular tension, reading rate, and blinking rate are thus studied with the conclusion that experimental evidence indicates that 15-foot candles should be recommended for ordinary study and reading.

H. Hill, *Psychol. Abs.*

876. A Report of the Industrial Eye Accidents at Evansville Shipyards.

H. C. SLAUGHTER and W. M. COCKRAN. *Trans. Amer. Acad. Ophthalm. and Otolary*, 52, 567-573. May-June, 1947. 2 charts.

A review of the industrial ocular injuries arising in a shipyard, and their cost in loss and in compensation during 2½ years.

After the first half of this period, the services of a visiting ophthalmic surgeon were secured for daily treatment of injured workmen, resulting in an immediate reduction by 50% of the time lost by ocular injury, and with a final reduction of over 80% : the cost of compensation for such cases was also very largely reduced. The report illustrates clearly the value of skilled ophthalmic service in an industry normally bearing a high incidence of ocular injury. All corneal ulcers were given early hospital treatment.

P. Jameson Evans.

877. The Brightness and Legibility at Night of Road Traffic Signs.

J. S. SMYTH. *Trans. Illum. Engineering Soc.*, 12, 71-91. 1947. 9 figs. 10 refs.

The report of a technical sub-committee called by the Illuminating Engineering Society at the request of the Ministry of Transport to investigate sign brightness and legibility. The work is divided into two parts: (1) problems of brightness of lettered signs, and (2) experiments made on symbols fitted with reflecting lenses.

A brightness is suggested which would provide adequate legibility and conspicuousness in well-lighted streets without causing a disturbing glare in poorly lighted areas. The maximum distance of legibility was found to be practically the same for black-on-white or white-on-black signs, but the black-on-white was more distinctive. Ideal brightness was unaffected by the colour of the sign.

An account is given of a study of the reflecting lens symbols used on traffic signs. Methods of fitting lenses and minor modifications to some symbols are suggested for easier recognition.

B.O.A.

Aviation

878. Analysis of Eye Fixations and Patterns of Eye Movement in Landing a Piper Cub J-3 Airplane.

J. TIFFIN and J. BROMER. *CAA Div. Res. Rep.*, No. 10, 1943; Publ. Bd. No. 50289. Washington, D.C.: U.S. Dep. Commerce, 1947. Pp. 38. \$1.00, microfilm; \$3.00, photostat.

Motion pictures of the eye-movement patterns of pilots during the last 5-10 seconds before landing were analysed to determine whether certain of them were characteristic of the skilful pilot. It is concluded that there are no clear-cut differences between eye-movement patterns of the experienced and inexperienced pilots. Experienced pilots, however, show back-and-forth excursions until the last 5 seconds before landing. It is recommended that instructors do not insist that students learn to look at a certain specified place while the airplane is being landed. A supplement presents two pertinent reports (1941) of progress on a study of visual depth perception in aviation, conducted by Carl Pfaffmann.

Psychol. Abs.

879. Occurrence of Bends, Scotomata and Hemianopsia at Altitudes below 20,000 feet.

C. S. HOUSTON. *J. Aviat. Med.*, 18, 165-168. 1947.

Scintillating temporal scotomata are reported in 3 cases, and unilateral temporal blindness in 2 cases, following repeated ascents to simulated altitudes of 18,000 to 20,000 feet. The symptoms developed upon descent from altitude and persisted for as long as one hour.

A. Chapanis. Psychol. Abs.

880. The Illusory Perception of Movement caused by Angular Acceleration and by Centrifugal Force during Flight. I. Methodology and Preliminary Results.

A. GRAYDIEL, B. CLARK and K. MACCORQUODALE.

Vide abs. 559.

Military

881. Mobile Ophthalmic Column in Pultusk. (Okulistyczna czołówka operacyjna w Pułtusk.)

L. SZYMANSKI. *W Służby Zdrowia* (Polish), 4, 11-12. April, 1947.

During 26 days' action of the mobile ophthalmic column in Pultusk in the war 1,373 out-patients were treated and 117 eye operations performed—52 cataracts, 8 antiglaucomatous operations, 7 optical indectomies, and 47 cosmetic and plastic operations.

W. H. Melanowski.

XXXIX. COMPARATIVE OPHTHALMOLOGY

882. The Primary Optic Centres of the Rat. An Experimental Study by the "Bouton" Method.

W. J. H. NAUTA and J. J. VAN STRAATEN. *J. Anat.*, 81, 127-134. 1947.

This paper gives details of an experimental research into the anatomy of the central termination of the optic nerve fibres, by a

study of the distribution of degeneration of the end-feet of Held-Auerbach (boutons) after the removal of one or both eyes of albino rats.

A detailed account of the localization of degenerated boutons after operation is given, the abundance of degenerated boutons in the pretectal area being of particular interest.

British Abstracts.

883. **The Normal and Parietal Eyes of the Tuatara.**

W. GASSON. *The Optician*, 37, 261—265. 1947. 6 figs.

The normal and the vestigial median eye of the Tuatara lizard, its function and anatomical structure, are described. The Tuatara or *Sphenodon* is found only on some of the most inaccessible islands in the Bay of Plenty, New Zealand and is the only living survivor of a group of reptiles which flourished during the Red Sandstone age.

The parietal eye is complete with cornea, lens, pigmented retina, optic nerve, etc., but degenerates as the animal matures. It is covered with skin and is invisible until dissected. The probable purpose of this elementary eye was to warn the animal of the approach of an enemy from above.

B.O.A.

884. **Variation and Structure of the Eye of the Desert Locust.** (*Schistocerca gregaria* [Forskål].)

M. L. ROONWAL. *Proc. Roy. Soc. B.*, 134, 245—272. 1947.

This paper gives a full account of the development and variation in structure and distribution of the stripes found in the compound eye of the locust. The different arrangements of these stripes correspond to no structural differences but only to variation in density and distribution of pigment. In general the *gregaria* phase has unstriped eyes, the *solitaria* phase striped ones. *Gregaria* eyes give a perfectly defined apposition image—a fact explained by supposing that the background of pigment constitutes an anti-halation device. The eye is suited to diurnal vision at high levels of illumination; the connection of this with behaviour characteristic of the phase is discussed. *Solitaria* eyes give relatively poor images and are ill adapted for either bright light or for the precise vision required in flocking behaviour.

British Abstracts.

885. **On the Development of the Eye from the Protozoan up to Man.** (Ueber die Entwicklung des Auges angefangen von den Protozoen bis hinauf zum Menschen).

E. WÖLFFLIN. *Klin. Monatsbl. f. Augenh.*, 111, 129—142. Jan., 1947. 9 figs.

A post-graduate lecture without original investigation. The author mentions the fact that Johnson Lindsay has examined many wild animals, but was unable to ophthalmoscope a lion. Wölfflin was the first to examine with the ophthalmoscope a hypnotised lion. There is no macula visible. He brings forward the general thesis that the eye is an ingenious instrument perfectly adapted to the surroundings and habits of life of the animal. It is remarkable how few forms of the eye suffice to cover so many different needs.

Loewenstein.

XL. MISCELLANEOUS

886. **Novelties in Ophthalmology.** (Neues aus der Augenheilkunde).

K. LINDNER. *Wien. klin. Wchsnschr.*, 59, 265—267. May, 1947.

Lindner considers several new aspects of ophthalmology—the aqueous veins of Ascher, described as formations analogous to

Schlemm's canal; measurement of the vascular pressure in the retina according to Bailliart's method; Hruby's method of slit-lamp examination of the vitreous and fundus; the method of Rieken for objective measurement of the light sense; the sulphonamide treatment of trachoma; penicillin treatment of eye infections; the treatment of corneal ulcers by 20% zinc sulphate as advised by Eperon; trephining of the cornea for corneal ulcers; and so on. For glaucoma, Lindner first performs a fistulizing operation and at a later stage when the tension is low, the main operation (for instance, Elliot's trephining). Electro-coagulation in the ciliary region (Vogt's cyclodiathermy) may be useful in desperate cases. Lindner describes his own method of cataract extraction which gives very good results. He recommends the operation of Sato for keratoconus, and finally gives a short sketch of his own theory of myopia.

Lindner believes that myopia is intimately connected with the amount of near work done and that its actual occurrence depends upon softening and autolysis of the sclera by ferments derived from the blood and the white blood corpuscles. Normally the sclera is protected from this action by the suprachoroida which separates it from the vascular choriocapillaris. The suprachoroida becomes thinner towards the posterior pole of the eye where the capillaries are densest and it becomes much attenuated in myopia. Lindner explains the formation of a staphyloma verum by a sudden diminution or practical disappearance of the suprachoroida. [This theory has excited some controversy and is more fully detailed in earlier papers by Lindner. See *Klin. Med.*, 1, 1. Jan., 1946.] *H. L.*

887. Fifty Years of Ophthalmology. (Cinquante années d'ophtalmologie.)

V. FILATOV, *Médecin Français*, No. 7, 97-100. April 10, 1947.

A
ance
use
optic atrophy, trachoma, blepharitis, and spring catarrh.

Vide abs. 356.

S. Vallon.

d. Assoc., 23, 81-83. 1947.

al practitioner. Glaucoma is an insidious disease which develops without warning. A routine physical examination by a general practitioner should include the intra-ocular tension taken with a tonometer [sic]. Intra-capsular cataract extraction can be performed on people over forty years of age. The
disappear spontaneously. Contact glasses are given to people with a deformity, or disability, of the eyes, or to extremely short-sighted persons.

C. McCulloch.

76-78. 1947.

The subjects discussed are congenital
ther during pregnancy, ophthalmia
genital cataracts, corneal transplants,

eye injuries and sympathetic ophthalmia.

C. McCulloch.

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